

Currency Futures, Daily Profits and Balances, and Margin Call

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Abstract

This case deals with currency futures. Students will learn how changes in the exchange rate affect a currency investor's account balance. First, students will examine how changes in the exchange rate affect a "long" investor's account balance. Then, they will learn about "margin call" and evaluate the possibility of "margin call" in the context of this investment. Finally, they will examine how changes in the exchange rate affect a "short" investor's account balance. This case is a hands-on experience for students who want to learn how currency futures work.

Keywords: currency futures, exchange rate, margin call, long position, short position

JEL classifications: F30, F31, G15

I. Introduction

Robert is a small investor. All his life, he invested in stocks and bonds. Nowadays, he is looking into different alternatives like futures and options. He doesn't know much about these investment tools so he has decided to get some help from his friend Roger. They are having lunch at a place close to Roger's firm.

"Roger, thanks for coming. As I mentioned on the phone, I am thinking about investing in futures and options. I don't know much, so I need your help."

"No problem Bob. I know a little bit about these. What do you want to learn? Do you want to learn how to trade?" Roger asks.

"Roger, they told me that, when you invest in futures, sometimes your broker will contact you if you lose too much money. Is that correct?"

"Yes, everyday your balance changes depending on whether that asset goes up or down. Let's say, you took a long position in oil futures and oil went up. Your balance at the end of the day will go up. But, if oil goes down, your balance goes down. And if one day, your balance goes below a certain level which they call the "maintenance margin", your broker will contact you and you will either put more money in or close your position and take out your money" Roger explains.

Robert asks "What happens if I take a short position in oil futures?"

"If you take a short position and oil goes down, it is good, your balance will go up. But, if oil goes up when you have a short position, then your balance will go down. Again, if your balance drops below the maintenance margin, you will receive a margin call, meaning that your broker will contact you. The same thing happens: you will either put more money in or close your position and take out your money" Roger responds.

"It sounds a little bit confusing to me. I am not sure I can understand this stuff" Robert sighs.

Roger responds: “Don’t worry. It is not that difficult to understand. I have brought some some books with me. Let’s look at these. I am sure you can do this”.

“Thanks my friend! Let’s look at these and see how it goes!” Robert exclaims.

Currency Futures

A currency futures contract is like a forward contract: It specifies that a certain currency will be exchanged for another at a specified time in the future at prices specified today.

Investopedia.com explains currency futures as follows: “Currency futures are a transferable futures contract that specifies the price at which a currency can be bought or sold at a future date. Currency futures contracts are legally binding and counterparties that are still holding the contracts on the expiration date must trade the currency pair at a specified price on the specified delivery date. Currency future contracts allow investors to hedge against foreign exchange risk.”

The differences between futures contracts and forward contracts are:

1. Futures contracts are:

Standardized in terms of contract size and delivery date

For example:

€62,500/contract with maturity date of 3/31/2018; or

Y12.5 million/contract with maturity date of 6/30/2017

Forward contracts are tailor-made by the two parties with the help of a large bank.

2. Most of the time, no delivery (no exchange of \$ and € for example when the maturity date comes).

With forward contracts, delivery occurs (\$ and € will be exchanged when the date comes).

3. Futures contracts are “marked-to-market” meaning that the investor’s account balance goes up or down each day, depending on the value of the € versus the \$.

If the investor wants to close his/her position, he/she will take out the balance on that day.

Almost all the time, investors close their position before the maturity date, therefore no actual exchange of currencies occur on the maturity date.

Forward contracts are not “marked-to-market”. The two parties just wait until the maturity date to exchange the two currencies in the pre-specified amounts (i.e. the forward rate).

Forward contracts are not like an investment account where you buy or sell futures, stocks, bonds, etc. Forward contracts are just agreements between the two parties to exchange currencies in the future.

4. In futures markets (these are exchanges like Chicago Mercantile Exchange, which is similar to an exchange like NYSE for stocks), there is a clearinghouse (a separate entity) that deals with the problems.

If one party cannot make the payment, for example, the clearinghouse will make the payment and then will go after the party that could not pay.

With forward contracts, no clearinghouse (no exchange building also).

Investors can take a long or a short position. Investopedia.com explains the long position as follows: “A long (or long position) is the buying of a security such as a stock, commodity or currency with the expectation the asset will rise in value.” A short position, on the other hand, is taken when the investor expects the asset (or currency) to go down.

To take a long or a short position in a € futures contract, you need to open an account in a brokerage firm. You will need to deposit an initial amount to start (called initial margin or initial performance bond). Also, your balance cannot fall below “maintenance margin”, if it does, you will receive a “margin call”. Your broker will contact you and you will either deposit additional money or you will close your position and take out the remaining balance.

With futures, we have daily resettlement of gains and losses rather than one big settlement at maturity.

Every trading day:

If the price goes down, the long pays the short

If the price goes up, the short pays the long

After the daily resettlement, each party has a new contract at the new price with one-day-shorter maturity.

An Example

Robert is looking at an example that Roger brought. Below is the example:

Three days ago, you entered into a futures contract to sell €125,000 at \$1.40 per €. Over the past three days the contract has settled at \$1.32, \$1.28, and \$1.26. You start with \$3,000.

- a. How much have you made or lost in \$ every day (day 1, 2, 3)? What is your balance at the end of each day?
- b. What is your total profit or loss in \$ for the 3-day period?
- c. If you start with \$3,000 and if your maintenance margin is \$1,000, would you receive a margin call during this period?
- d. Let's assume that, at the end of the third day, you withdraw \$15,000. Let's also assume that, the next day (at the end of the fourth day), the exchange rate is \$1.30/€. Will you receive a margin call?
- e. If you close your account after that, what will be your total profit/loss?

Case Study Series

a.	Day	Profit/Loss	Balance
	1	\$10,000	\$13,000
	2	\$5,000	\$18,000
	3	\$2,500	\$20,500

b. Total profit = \$17,500

c. No.

d.	Day	Profit/Loss	Balance
	1	\$10,000	\$13,000
	2	\$5,000	\$18,000
	3	\$2,500	\$20,500-15,000 = \$5,500
	4	-\$5,000	\$500

Yes, we will receive a margin call.

e. Total profit = \$12,500

The Task

Roger wants Robert to do more practice, so he asks him to do an example by himself. Below is the example that Robert needs to do:

Three days ago, you entered into a futures contract to buy €62,500 at \$1.30 per €. You start with \$3,000. Your maintenance margin is \$1,000.

1. What is the critical rate where you will receive a margin call?
2. Over the past three days the contract has settled at \$1.32, \$1.28, and \$1.26. How much have you made or lost in \$ every day (day 1, 2, 3)? What is your balance at the end of each day?
3. What is your total profit or loss (in \$) for the 3-day period?
4. Would you receive a margin call during this three-day period?
5. Let's assume that, at the end of the third day, you deposit an additional \$3,000. Let's also assume that, the next day (at the end of the fourth day), the exchange rate is \$1.23/€. If you close your account after that, what will be your total profit/loss? Show your daily profits/losses and balances for that 4-day period.
6. If, three days ago, you entered into a futures contract to sell €62,500 at \$1.30 per €, what would be the critical rate where you will receive a margin call? Again, you start with \$3,000 and your maintenance margin is \$1,000.
7. Over the past three days the contract has settled at \$1.32, \$1.28, and \$1.26. How much have you made or lost in \$ every day (day 1, 2, 3)? What is your balance at the end of each day?

8. What is your total profit or loss (in \$) for the 3-day period?
9. Would you receive a margin call during this three-day period?
10. In order to answer questions 6-9, is there a shortcut way? In other words, do we need to compute the daily profits/losses one by one?

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