Forward Premium and Forward Contracts

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Abstract

This case deals with forward contracts. Students will learn about spot and forward rates, forward premium, long and short forward positions, and the profit or loss associated with a long or short forward position. Students will also learn about the transactions that would take place between the long- and short-parties when the forward contract matures. This is a hands-on practice for students who want to learn more about forward contracts.

Keywords: forward premium, forward contract, forward rate, spot rate
JEL classifications: G15, G23, G31

Introduction

Mike is a graduate student who is enrolled in "International Finance". When he enrolled, he thought that this course would be very easy for him. But after the semester progressed, the class started getting more intense. Now, they are learning about different financial instruments like forward contracts, futures contracts, and option contracts on currencies. He feels like he will struggle in the coming exam. There is also a class project where he will create an investment strategy with currency forward contracts. He has chosen to use Swiss Franc forward contracts for this assignment.

When he looks at his class notes, he cannot understand much. The examples that they did in the classroom are all over the place. So, he has now decided to look at some websites. He thinks that from these websites, at least he can understand the basics. "Maybe after that, I can understand the examples in my notes. And then, I can also do some of the problems in the book" he murmurs. "But, let's look into the websites first. That will be a good starting point for me."

Forward Contracts And Forward Premium

Mike has found a few websites that explain forward contracts. One of them "Investopedia.com", explains the contracts as follows:

"A forward contract is a customized contract between two parties to buy or sell an asset at a specified price on a future date. A forward contract can be used for hedging or speculation, although its non-standardized nature makes it particularly apt for hedging. Unlike standard futures contracts, a forward contract can be customized to any commodity, amount and delivery date. A forward contract settlement can occur on a cash or delivery basis. Forward contracts do not trade on a centralized exchange and are therefore regarded as over-the-counter (OTC) instruments. While their OTC nature makes it easier to customize terms, the lack of a centralized clearinghouse also gives rise to a higher degree of default risk. As a result, forward contracts are not as easily available to the retail investor as futures contracts".

The same website explains the difference between forward contracts and futures contracts as follows:

"Fundamentally, forward and futures contracts have the same function: both types of contracts allow people to buy or sell a specific type of asset at a specific time at a given price. However, it is in the specific details that these contracts differ. First of all, futures contracts are exchange-traded and, therefore, are standardized contracts. Forward contracts, on the

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other hand, are private agreements between two parties and are not as rigid in their stated terms and conditions. Because forward contracts are private agreements, there is always a chance that a party may default on its side of the agreement. Futures contracts have clearing houses that guarantee the transactions, which drastically lowers the probability of default to almost never.

Secondly, the specific details concerning settlement and delivery are quite distinct. For forward contracts, settlement of the contract occurs at the end of the contract. Futures contracts are marked-to-market daily, which means that daily changes are settled day by day until the end of the contract. Furthermore, settlement for futures contracts can occur over a range of dates. Forward contracts, on the other hand, only possess one settlement date.

Lastly, because futures contracts are quite frequently employed by speculators, who bet on the direction in which an asset's price will move, they are usually closed out prior to maturity and delivery usually never happens. On the other hand, forward contracts are mostly used by hedgers that want to eliminate the volatility of an asset's price, and delivery of the asset or cash settlement will usually take place."

Another website, "futuresknowledge.com", explains the forward premium:

"Forward Forex rates are not provided by exchanges but rather quoted by banks and dealers. Banks quote forward rates for major currencies in maturities of one, three, six, nine, or twelve months. Forward rates are generally different from the spot rates. If the forward rate of a foreign currency is quoted higher than the spot price, the difference is forward premium. It indicates the foreign currency is likely to appreciate."

Forward premium shows the market's expectation. If there is a premium, the market expects the rate to be higher in the future when compared to the spot rate. If there is a discount (i.e. if the forward premium is negative), the market expects the rate to be lower in the future when compared to the spot rate.

Mike has learned that the formula for forward premium is as follows:

Forward premium = [(F – S) / S] * (360/number of days in the contract)

Where F is the forward rate and S is the spot rate. [(F – S) / S] is the expected premium (or increase) in the rate over that period. We multiply that with (360/number of days in the contract) because we want to find the "annualized" expected increase in the rate.

Mike has found an example on forward premium which is on currency forward contracts. In the example, the 3-month forward rate for dollar/euro rate is $1.20 per euro, the spot rate is $1.18 per euro. The contract is a 91-day contract. The solution is:

Forward premium = [(F($/€) – S($/€)) / S($/€)] * (360/91)
Forward premium = [(1.20 – 1.18) / 1.18] * (360/91)
Forward premium = (0.01695) * (360/91)
Forward premium = 0.06705 = 6.705%/year

This means that, in annualized terms, the euro is expected to go up by 6.705% against the dollar over the next three months.

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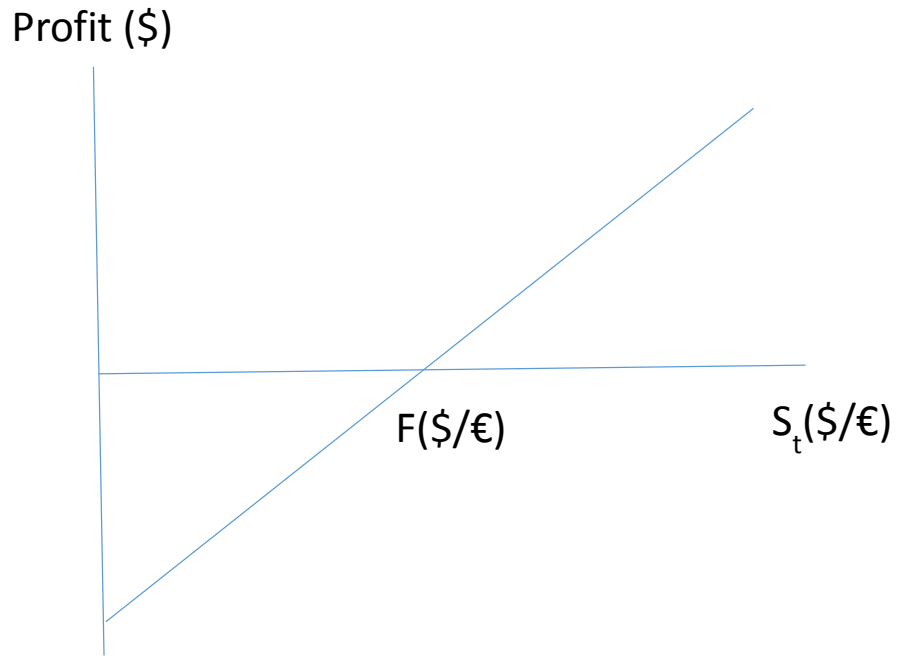
Long- And Short-Forward Positions

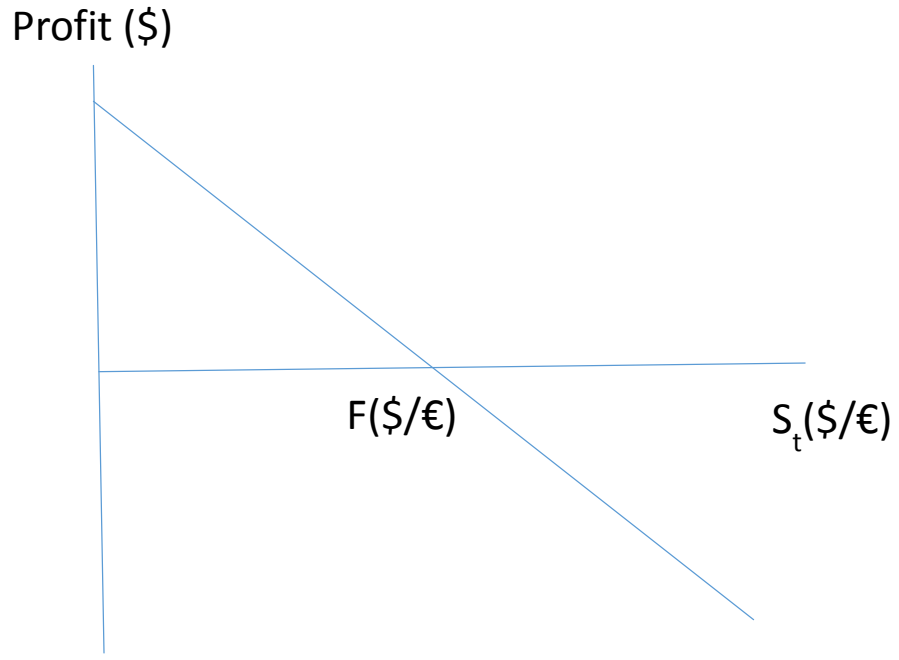
Investors can take a long or a short position on a forward contract.

The profit graph for a long position on a $/€ forward contract looks like the following:



If the future spot rate for the euro is higher than the forward rate for the euro (i.e. the rate that the investor signed the contract on), the investor makes money. The investor makes money because he agreed upon buying the euro at the forward rate, and since the value of the euro in the future (i.e. at the maturity date) is higher, he can immediately sell it at a higher price. Or, even if he needs the euros and does not want to sell them, he would still be good because if he waited to buy the euros, he would have to pay more in dollars when compared to the forward rate.

The profit graph for a short position on a $/€ forward contract looks like the following:



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Here, the investor took a short position, meaning that he agreed to sell euros at the forward rate. If the future spot rate for the euro is higher than the forward rate for the euro (i.e. the rate that the investor signed the contract on), the investor loses money. The investor loses money because he agreed upon buying the euro at the forward rate which is higher. If he did not sign the contract and just waited, he would be able to buy those euros at a lower price (because the future spot rate is lower than the agreed-upon forward rate). On the other hand, if the future spot rate for the euro is lower than the forward rate for the euro (i.e. the rate that the investor signed the contract on), the investor makes money. In that case, he would be able to sell his euros in the future (i.e. at the maturity date) at a higher $ price (when compared to the future spot rate) due to his contract.

The Decision

For his project, Mike has found the following rates for the Swiss Franc versus the dollar.

	in $	per $
CHF	0.8000	1.2500
1-month forward	0.8022	1.2466
3-month forward	0.8037	1.2442
6-month forward	0.7980	1.2531

The first column shows the direct quotations and the second column shows the indirect quotations. The first row shows the spot rate between the two currencies and the following rows show the forward rates with different maturities between the two currencies.

1. In his project, Mike first wants to answer a few questions on the market's expectations for the $/CHF rate. Mike first wants to know if the investors in the market believe that the Swiss Franc will be more or less valuable against the $ in 6 months.

2. Mike wants to know if the investors in the market believe that the $ will appreciate or depreciate against the CHF in 3 months.

3. Using the forward premium formula, he wants to compute the 6-month forward premium (or discount) for the CHF in American terms. The 6- month contract is a 182-day contract. What is the meaning of this number?

4. He then wants to compute the 3-month forward premium (or discount) for the $ in European terms. The 3-month contract is a 90-day contract. What is the meaning of this number?

5. For his project, Mike needs to make an imaginary investment in a forward contract. Mike believes that the $ will depreciate (against the CHF) over the next 6 months and it will fall below the forward rate that is given in the table. As an investment, should he take a long or a short position in the CHF forward contract?

6. If he takes a long position by buying CHF1 million 6-months forward, and if the actual spot rate 6 months later is S6m($/CHF) = 0.8200, what would be his profit (loss)?

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7. In that case, what would the transaction look like in 6 months? Would he give or receive CHF in exchange for $s? What would be the exchanged amounts?

8. If the actual spot rate in 6 months is $0.7721/CHF, what would be his profit (loss)?

9. In that case, what would the transaction look like in 6 months? What would be the exchanged amounts?

10. When using forward contracts, is the current spot rate between the two currencies relevant? Is the future, actual spot rate (when the forward contract matures) between the two currencies relevant?

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