Triangular Arbitrage in Forex Market

What is Arbitrage?

In the world of finance, arbitrage is the practice of taking advantage of a state of imbalance between two or more markets. A person who engages in arbitrage is called an arbitrageur. The arbitrageur exploits the imbalance that is present in the market by making a couple of matching deals in different markets, with the profit being the difference between the market prices.

Example of an Arbitrage

Suppose that an iPhone is selling for $800 in the US and for £500 in the UK. For simplicity sake, let us assume that the current exchange rate is £1 = $2. A simple conversion will tell us that an iPhone is worth more in the UK, since £500 = $1,000, which is more than $800.

With the presence of such mispricing, an investor can seek to take advantage of such a situation by adopting the following strategy:

1) Buy an iPhone in the US for $800.
2) Sell it in the UK for £500.
3) Convert £500 into $1,000.

This simple strategy will help yield an arbitrage profit of $1,000 - $800 = $200 per iPhone. Therefore, if one were to follow this strategy for 500 iPhones, the profit would be a whopping 500 x $200 = $100,000.

It is important to note that this example is very simplistic as it ignores several other factors like exchange rate risk, transaction costs and even changes in the prices of iPhones. These factors can affect the arbitrage profit significantly. However, the principle is sound: When there is a difference in pricing in 2 or markets, investors can attempt to buy in the cheaper market and sell in another market with higher prices.

What is Triangular Arbitrage in FX?

Though slightly different, triangular arbitrage is in similar to the iPhone example given above – exploiting the mispricing that exists in the market. But what exactly is triangular arbitrage? Basically, triangular arbitrage is the act of exploiting an arbitrage opportunity resulting from a pricing discrepancy among three different currencies in the foreign exchange market.

A typical triangular arbitrage strategy involves three trades:
1) Exchanging the initial currency for a second
2) Trading second currency for a third
3) and the third currency for the initial.

[During the second trade, the arbitrageur locks in a zero-risk profit from the discrepancy that exists when the market cross exchange rate is not aligned with the implicit cross exchange rate.]

Example - Arbitrage Currency Trading

Suppose the current exchange rates of currency pairs are as follows:

EUR/USD: 1.1837
EUR/GBP: 0.7231
GBP/USD: 1.6388

In such a scenario, a FX trader could perform a triangular arbitrage by adopting the following steps:

1) Buy 10,000 Euros for $11,837 USD.
2) Sell the 10,000 Euros, for 7,231 British pounds (GBP).
3) The 7,231 GBP in turn could then be sold for $11,850 USD.

This would yield a profit of $11,850 - $11,837 = $13 per trade for the trader. There will be no open exposure as long positions cancel short positions in each currency. This same method could be used with standard lots (ie. $100,000 position) which would yield a profit of $130. This can be performed as long as there is pricing discrepancy among three different currencies in the foreign exchange market.

[This can be continued until the pricing error is traded away.]

Identifying Opportunities for Triangular Arbitrage

The basic formula for the relationship of 3 different currencies is as follows:

AAA/BBB x CCC/AAA = CCC/BBB

When there is no pricing discrepancy, this equation would hold. However, when this equation goes wrong, an opportunity for triangular arbitrage arises.

Let's apply this formula to the example given above:

EUR/USD x GBP/EUR = GBP/USD
$1.1837 \times 1/0.7231 = 1.6370 \neq 1.6388$

Since the equation does not hold in this case, a chance to perform triangular arbitrage occur, which was exactly what we did in the above example.

Things to Help You

Doing the calculations yourself to find pricing inefficiencies in the market can be time consuming and slow. However we are now living in the 21st Century and o**ne of the advantages sis that for everything, there is technology there to help you. In recent years,** many tools have appeared across the Internet. One of these tools is the forex arbitrage calculator, which provides the retail forex trader with real time forex arbitrage opportunities. However, most Forex arbitrage calculators are sold for a fee on many Internet sites by both third parties and forex brokers. Others are offered for free or for trial upon opening an account with the relevant parties.

Besides the arbitrage calculators, there are also forex arbitrage software programs for sale online. But as with all software programs and platforms use for forex trading, it is important to try these out on a demo account as this would prevent one from incurring a loss due to using faulty software. Today, there are a wide variety of products available and it is almost impossible to determine which is best. It would be good to try out multiple products before settling on one.

Does it really exist? Is it really possible?

So in theory, triangular arbitrage is basically a risk-free trading strategy that allows traders to make a profit with no open currency exposure. The strategy involves the buying and selling of different currency pairs to exploit any pricing discrepancy that are present in the market. Enough of theories and let's move on to the million-dollar, or perhaps billion-dollar, question – is triangular arbitrage really possible? After all, this whole triangular arbitrage theory seems too good to be true. In fact, if it was that simple, the streets will be filled with millionaires who have simply just have to perform the triangular arbitrage strategy!

As a matter of fact, triangular arbitrage opportunities do actually exist in the forex trading market. However, it is important to note that these opportunities are very rare and often exist only for a few seconds. Why? One has to realize that these arbitrage opportunities will not last forever. Once people start to engage in these profit taking activities, the market will correct itself and bring the foreign exchange rate to the equivalent level. Furthermore, with the presence of several high-frequency-trading (HFT) firms today, which uses advance and complicated computer programs to execute trades automatically, the time for the market to correct itself is made a lot faster as compared to a century ago. These complex computer soft wares are programmed to specifically sift out such arbitraging opportunities and will profit from these imbalance at the very split second that these opportunities present themselves.

Conclusion

As with other arbitrage strategies, the market will return to the equivalent level once traders start to exploit the pricing inefficiencies that are present in the market. These opportunities are therefore often around for a very short period of time. Hence, speed in identifying such opportunities and the ability to react quickly are needed to effectively profit.

However, with the advancement of technology in recent decades, such opportunities are getting fewer and fewer. As mentioned earlier, many HFT firms are equipped with complex trading algorithms and computer programs that are able to move faster than any retail trader and take advantage of the mispricing the very millisecond the chance to do so appear. On the broker's side, advance programs have also been set up to identify any mispricing which further eliminates the possibility of such arbitrage lasting longer than 1 millisecond. After all, there are many traders out there who are looking for such opportunities and unless you have the ability to put together a complex trading algorithm with several supercomputers, it would be foolish to think that you can become an overnight millionaire by performing the triangular arbitrage. Furthermore, other factors like brokerage fees and transaction fees further reduce the possibility of one making constant profit from triangular arbitrage in the long run.

Therefore, while it might seem all possible and mouth-watering in theory, it is almost impossible to perform a triangular arbitrage as a retail foreign exchange trader. To become a successful FX trader, a wise move will hence be to read up more on financial news and perfecting one's trading strategy instead.

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