

To be an effective trader, understanding your overall portfolio's sensitivity to market volatility is important. But this is particularly so when trading forex. Because currencies are priced in pairs, no single pair trades completely independently of the others. Once you know about these correlations and how they change, you can take advantage of them to control over your portfolio's exposure.

Defining Correlation

The reason for the interdependence of currency pairs is easy to see: if you were trading the British pound against the Japanese yen (GBP/JPY pair), for example, you are actually trading a kind of derivative of the GBP/USD and USD/JPY pairs; therefore, GBP/JPY must be somewhat correlated to one if not both of these other currency pairs. However, the interdependence among currencies stems from more than the simple fact that they are in pairs. While some currency pairs will move in tandem, other currency pairs may move in opposite directions, which is in essence the result of more complex forces.

Correlation, in the financial world, is the statistical measure of the relationship between two securities.

The [correlation coefficient](#) ranges between -1 and +1. A correlation of +1 implies that the two currency pairs will move in the same direction 100% of the time. A correlation of -1 implies the two currency pairs will move in the opposite direction 100% of the time. A correlation of zero implies that the relationship between the currency pairs is completely random.

Reading The Correlation Table

With this knowledge of correlations in mind, let's look at the following tables, each showing correlations between the major currency pairs for the month of March 2005.

EUR/USD	AUD/USD	USD/JPY	GBP/USD	NZD/USD	USD/CHF	USD/CAD
1 Month	0.94	-0.92	0.92	0.94	-0.99	-0.32
3 Month	0.47	-0.37	0.83	0.57	-0.98	-0.61
6 Month	0.74	-0.83	0.94	0.78	-0.96	-0.57
1 Year	0.85	-0.86	0.91	0.93	-0.98	-0.89

AUD/USD	EUR/USD	USD/JPY	GBP/USD	NZD/USD	USD/CHF	USD/CAD
1 Month	0.94	-0.91	0.95	0.96	-0.94	-0.17
3 Month	0.47	-0.24	0.81	0.90	-0.44	-0.14
6 Month	0.74	-0.70	0.75	0.89	-0.70	-0.54
1 Year	0.85	-0.87	0.79	0.90	-0.78	-0.81

The upper table above shows that over the month of March (one month) EUR/USD and AUD/USD had very strong positive correlation of 0.94. This implies that when the EUR/USD rallies, the AUD/USD will also rally 94% of the time. Over the longer term (three months), though, the correlation is slightly weaker (0.47).

In contrast, the EUR/USD and USD/CHF had a near-perfect negative correlation of -0.99. This implies that 99% of the time, when the EUR/USD rallies, USD/CHF will undergo a selloff. This relationship even holds true over longer periods as the correlation figures remain relatively stable.

NZD/USD	EUR/USD	AUD/USD	USD/JPY	GBP/USD	USD/CHF	USD/CAD
1 Month	0.94	0.96	-0.91	0.87	-0.92	-0.29
3 Month	0.57	0.90	0.15	0.83	-0.53	-0.35
6 Month	0.78	0.89	-0.61	0.84	-0.69	-0.38
1 Year	0.93	0.90	-0.84	0.93	-0.88	-0.94

USD/CHF	EUR/USD	AUD/USD	USD/JPY	GBP/USD	NZD/USD	USD/CAD
1 Month	-0.99	-0.94	0.94	-0.95	-0.92	0.21
3 Month	-0.98	-0.44	0.40	-0.82	-0.53	0.55
6 Month	-0.96	-0.70	0.83	-0.88	-0.69	0.70
1 Year	-0.98	-0.78	0.83	-0.90	-0.88	0.87

USD/CAD	EUR/USD	AUD/USD	USD/JPY	GBP/USD	NZD/USD	USD/CHF
1 Month	-0.32	-0.17	0.06	-0.03	-0.29	0.21
3 Month	-0.61	-0.14	0.12	-0.36	-0.35	0.55
6 Month	-0.57	-0.54	0.59	-0.42	-0.38	0.70
1 Year	-0.89	-0.81	0.80	-0.70	-0.94	0.87

Yet correlations do not always remain stable. Take USD/CAD and NZD/USD, for example. With a coefficient of -0.94, they had a strong negative correlation over the past year, but the relationship deteriorated over March 2005 for a number of factors, including the Reserve Bank of New Zealand's intentions to resume rate hikes, and political instability in Canada.

Correlations Do Change

It is clear then that correlations do change, which makes following the shift in correlations even more important. Sentiment and global economic factors are very dynamic and can even change on a daily basis. Strong correlations today might not be in line with the longer-term correlation between two currency pairs. That is why taking a look at the six-month trailing correlation is also very important. This provides a clearer perspective on the average six-month relationship between the two currency pairs, which tends to be more accurate. Correlations change for a variety of reasons, the most common of which include diverging monetary policies, a certain currency pair's sensitivity to commodity prices, as well as unique economic and political factors.

Here is a table showing the six-month trailing correlations that EUR/USD shares with other pairs:

Date	EUR/USD	AUD/USD	USD/JPY	GBP/USD	NZD/USD	USD/CHF	USD/CAD
03/29/2004 - 09/29/2004	6 Month Trailing	0.10	-0.28	0.69	0.68	-0.88	-0.60
04/29/2004 - 10/28/2004	6 Month Trailing	0.77	-0.67	0.47	0.84	-0.90	-0.78
05/31/2004 - 11/29/2004	6 Month Trailing	0.96	-0.88	0.61	0.88	-0.97	-0.89
06/30/2004 - 12/29/2004	6 Month Trailing	0.93	-0.94	0.87	0.94	-0.98	-0.85
07/30/2004 - 01/28/2005	6 Month Trailing	0.93	-0.93	0.92	0.95	-0.99	-0.86
08/31/2004 - 03/01/2005	6 Month Trailing	0.88	-0.91	0.96	0.91	-0.98	-0.80
09/30/2004 - 03/31/2005	6 Month Trailing	0.74	-0.83	0.95	0.79	-0.96	-0.58
	Average	0.76	-0.78	0.78	0.86	-0.95	-0.77

Calculating Correlations Yourself

The best way to keep current on the direction and strength of your correlation pairings is to calculate them yourself. This may sound difficult, but it's actually quite simple.

To calculate a simple correlation, just use a spreadsheet, like Microsoft Excel. Many charting packages (even some

free ones) allow you to download historical daily currency prices, which you can then transport into Excel. In Excel, just use the correlation function, which is =CORREL(range 1, range 2). The one-year, six-, three- and one-month trailing readings give the most comprehensive view of the similarities and differences in correlation over time; however, you can decide for yourself which or how many of these readings you want to analyze.

Here is the correlation-calculation process reviewed step by step:

1. Get the pricing data for your two currency pairs; say they are GBP/USD and USD/JPY
2. Make two individual columns, each labeled with one of these pairs. Then fill in the columns with the past daily prices that occurred for each pair over the time period you are analyzing
3. At the bottom of the one of the columns, in an empty slot, type in =CORREL(
4. Highlight all of the data in one of the pricing columns; you should get a range of cells in the formula box.
5. Type in comma
6. Repeat steps 3-5 for the other currency
7. Close the formula so that it looks like =CORREL(A1:A50,B1:B50)
8. The number that is produced represents the correlation between the two currency pairs

Even though correlations do change, it is not necessary to update your numbers every day, updating once every few weeks or at the very least once a month is generally a good idea.

How To Use It To Manage Exposure

Now that you know how to calculate correlations, it is time to go over how to use them to your advantage.

First, they can help you avoid entering two positions that cancel each other out, For instance, by knowing that EUR/USD and USD/CHF move in opposite directions nearly 100% of time, you would see that having a portfolio of long EUR/USD and long USD/CHF is the same as having virtually no position - this is true because, as the correlation indicates, when the EUR/USD rallies, USD/CHF will undergo a selloff. On the other hand, holding long EUR/USD and long AUD/USD is similar to doubling up on the same position since the correlation is so strong.

[Diversification](#) is another factor to consider. Since the EUR/USD and AUD/USD correlation is traditionally not 100% positive, traders can use these two pairs to diversify their risk somewhat while still maintaining a core directional view. For example, to express a bearish outlook on the USD, the trader, instead of buying two lots of the EUR/USD, may buy one lot of the EUR/USD and one lot of the AUD/USD. The imperfect correlation between the two different currency pairs allows for more diversification and marginally lower risk. Furthermore, the central banks of Australia and Europe have different monetary policy biases, so in the event of a dollar rally, the Australian dollar may be less affected than the Euro, or vice versa.

A trader can use also different pip or point values for his or her advantage. Lets consider the EURUSD and USDCHF once again. They have a near-perfect negative correlation, but the value of a pip move in the EURUSD is \$10 for a lot of 100,000 units while the value of a pip move in USDCHF is \$8.34 for the same number of units. This implies traders can use USDCHF to [hedge](#) EURUSD exposure.

Here's how the hedge would work: say a trader had a portfolio of one short EUR/USD lot of 100,000 units and one short USD/CHF lot of 100,000 units. When the EUR/USD increases by ten pips or points, the trader would be down \$100 on the position. However, since USDCHF moves opposite to the EURUSD, the short USDCHF position would be profitable, likely moving close to ten pips higher, up \$83.40. This would turn the net loss of the portfolio into minus \$16.60 instead of minus \$100. Of course, this hedge also means smaller profits in the event of a strong EUR/USD sell-off, but in the worst-case scenario, losses become relatively lower.

Regardless of whether you are looking to diversify your positions or find alternate pairs to leverage your view, it is very important to be aware of the correlation between various currency pairs and their shifting trends. This is powerful knowledge for all professional traders holding more than one currency pair in their trading accounts. Such

knowledge helps traders, diversify, hedge or double up on profits.

Summary

To be an effective trader, it is important to understand how different currency pairs move in relation to each other so traders can better understand their exposure. Some currency pairs move in tandem with each other, while others may be polar opposites. Learning about currency correlation helps traders manage their portfolios more appropriately. Regardless of your trading strategy and whether you are looking to diversify your positions or find alternate pairs to leverage your view, it is very important to keep in mind the correlation between various currency pairs and their shifting trends.

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Kathy Lien is Chief Strategist at the world's largest retail forex market maker, [Forex Capital Markets](#) in New York. Her book "Day Trading the Currency Market: Technical and Fundamental Strategies to Profit from Market Swings" (2005, Wiley), written for both the novice and expert, has won much acclaim. Easy to read and easy to apply, this book shows traders how to enter the currency market with confidence - and create long-term success! Kathy has taught currency trading seminars across the U.S. and has also written for CBS MarketWatch, Active Trader, Futures and SFO magazines.

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