

CORRELATION MATRIX OF VARIOUS ASSET CLASSES¹

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	Cash Equivalents	5-Year Gov't Bonds	Short Term Fixed	U.S. Large Value	U.S. Small Value	U.S. Large Stocks	U.S. Small Stocks	Int'l Large Stocks	Int'l Small Stocks
Cash Equivalents	1.000								
5-Year Gov't Bonds	0.412	1.000							
Short Term Fixed	0.929	0.673	1.000						
U.S. Large Value	0.130	0.131	0.142	1.000					
U.S. Small Value	0.059	0.065	0.080	0.841	1.000				
U.S. Large Stocks	0.064	0.048	0.051	0.855	0.700	1.000			
U.S. Small Stocks	-0.012	-0.065	-0.016	0.788	0.916	0.806	1.000		
Int'l Large Stocks	0.054	-0.090	-0.027	0.555	0.479	0.662	0.570	1.000	
Int'l Small Stocks	0.021	-0.185	-0.073	0.406	0.452	0.495	0.530	0.897	1.000

1.00-.8
.79-.6
.59-.4
.39-.2
<.19

In statistics, **Correlation** is the extent to which two variables have a linear relationship (that is, a relationship that increases or decreases at a constant rate). Following is an example of correlated variables:

For example: Correlation between rain, sunscreen sales and umbrella sales at an amusement park is easy to see. There is a positive correlation between rainy days and umbrella sales, as sales of umbrellas increases on rainy days. Conversely, there is a negative correlation between rainy days and sunscreen sales, i.e. on rainy days people tend not to buy sunscreen.

But correlation as a statistic isn't able to explain why or how the relationship between two variables, x and y, exists; only that it does exist.

Correlation does NOT imply causation, though there can be a cause and effect relationship (as in the example above).

CORRELATION measures the strength and direction of a relationship between two variables. The correlation value is always between +1 and -1.:

- **Correlation of -1** indicates a perfectly negative relationship
- **Correlation of -0.50** indicates a moderately negative relationship
- **Correlation of 0** indicates no relationship
- **Correlation of +0.50** indicates a moderately positive relationship
- **Correlation of +1** indicates a perfectly positive relationship

In other words, a positive correlation means that the variables have a direct relationship (changing in the same direction, as X increases in value Y also tends to increase in value) and a negative correlation means that the variables have an inverse relationship (changing in opposite directions, as X increases in value Y tends to decrease in value).

A CORRELATION MATRIX is a table giving the correlations between pairs of data sets.

WHY IT MATTERS:

If an investor can find an investment that consistently goes in the opposite direction as another investment, then holding both investments can dramatically decrease risk and potentially increase returns.

Accordingly, negative or low correlation can be one way to reduce the risk in a portfolio.

Past performance is no guarantee of future results.