

## Two-way (Simple) Arbitrage

Suppose that the Euro (€) is worth \$1.1 in Toronto and worth \$1.2 in London. To arbitrage the difference you would buy Euros in Toronto and sell them in London. Each time you do this you make  $\left(\frac{1.2-1.1}{1.1}\right) \approx 0.09$  on the transaction. Clearly, if it were possible, it wouldn't be possible for long!

## Triangular Arbitrage

Here are some actual cross rates. Read the table with the horizontal measuring the LHS currency price of the vertical currency.

Notice that the rates are related to each other – above and below the diagonal. Why is this true and what does it mean?

### KEY CURRENCY CROSS RATES

1:59 p.m. EDT 09/12/11 Key Currency Cross Rates

	USDollar	Euro	Pound	SFranc	Peso	Yen	Cdn \$
Canada \$	0.9966	1.353	1.5739	1.1237	0.07698	0.0129	...
Japan	77.25	104.87	122	87.101	5.967	...	77.514
Mexico	12.946	17.576	20.446	14.597	...	0.16759	12.99
Switzerland	0.8869	1.2041	1.4007	...	0.06851	0.01148	0.88993
U.K.	0.63319	0.85962	...	0.71394	0.04891	0.0082	0.63535
Euro	0.73659	...	1.1633	0.83053	0.0569	0.00954	0.73911
U.S. \$	...	1.3576	1.5793	1.1275	0.07724	0.01294	1.0034

Source: ICAP plc WSJ

[http://online.wsj.com/mdc/public/page/mdc\\_currencies.html?mod=mdc\\_h\\_dtabnk](http://online.wsj.com/mdc/public/page/mdc_currencies.html?mod=mdc_h_dtabnk)

Suppose on the other hand, the cross rates looked like this:

### FALSE CURRENCY CROSS RATES

1:59 p.m. EDT 09/12/11 Key Currency Cross Rates

	Euro	Pound	CdnDir
Canada	1.353	1.5	...
U.K.	0.85962	...	0.666666
Euro	...	1.1633	0.73911

How could I make money? One way is to use your dollars to buy £'s paying \$1.50. Now buy Euros. One £ will buy 1.1633 € Now use your Euros to purchase Canadian \$: 1.1633€ will buy 1.353 x 1.1633 = \$1.56 and I have my \$1.50 with \$0.06 left over. This is pure profit as I can do the “round trip” as often as I like.

Needless to say, you don't find these opportunities very frequently, and even if you do think you have found one, there are transactions costs and the difficulty of making simultaneous exchanges. So beware the promise of easy money through arbitrage!