

Arbitrage

BY KEVIN BRYAN

An economist is walking to lunch with an old friend. The friend stops, startled, and calls out, “Look at that hundred dollar bill on the sidewalk! How about that?” The economist walks right past it, telling his friend, “If there had been a hundred dollars there, someone would have picked it up already.”

This joke gets to the heart of a key economic principle: Opportunities for risk-free profit in markets disappear quickly. Such profit is called arbitrage.

More specifically, arbitrage tends to refer to a difference in pricing of the same commodity or asset in two different markets. For example, imagine that MP3 players sell for \$50 in Thailand and a buyer in California is willing to pay \$100 per player. If shipping costs are \$10 per player, a firm could make \$40 per player by buying in Bangkok and selling in San Diego. This profit opportunity might exist briefly, but soon other people will catch on, driving up the prices of MP3 players in Thailand, driving them down in California, or both.

A more realistic example is “triangular arbitrage” in the currency market. Imagine you can get a euro for \$1.25 from Broker A, a British pound for 1.5 euros from Broker B, and a dollar for 50 pence (half of a British pound) from Broker C. In this case, you could convert \$100 to 80 euros at Broker A, then convert the euros to 53.33 pounds at Broker B, and finally convert the pounds to \$106.66 for a profit of \$6.66 per cycle. Investment houses have teams of analysts constantly on the lookout for these types of arbitrage cycles.

Many economic ideas are derived from the fact that arbitrage opportunities do not last. The concept of “covered interest rate parity” states that a currency future, or a contract to buy or sell a fixed amount of currency at some date in the future, can be priced solely by knowing the risk-free interest rate in both currencies and the current exchange rate. An example of a nearly risk-free U.S. interest rate is a short-term treasury bond, where default is almost unthinkable.

Imagine that the current exchange rate is \$1.25 per euro, that the annual euro risk-free interest rate is 12 percent, and that the annual dollar risk-free interest rate is 5 percent. In this case, a euro-dollar futures contract expiring in 12 months would be \$1.172 per euro. Why? Imagine that the futures contract was \$1.20 per euro. A firm could borrow \$100 at 5 percent interest, meaning the firm will owe the

bank \$105 in one year. The firm would then convert \$100 to 80 euros at the current exchange rate and invest the euros in a bond paying 12 percent. In one year, the firm would have 89.6 euros, which they could convert back to dollars at \$1.20 per euro, giving them \$107.52. After paying the bank \$105, the firm is left with \$2.52 in profit. This profit is risk-free because every component — the interest rates, the current exchange rate, and the futures rate — was locked in from the beginning. An equivalent example can be constructed for futures rates lower than \$1.172 per euro, where the investor would borrow euros and invest in American bonds.

The amount of money chasing these arbitrage opportunities is immense. The Bank for International Settlements estimates that more than \$1 trillion in foreign exchange swaps and futures are traded every day, and foreign exchange is only one of a vast number of markets with arbitrage possibilities.

Problems can arise, however, when firms chase price differential where risks are involved. Some of the biggest investment houses and hedge funds in the world have been bankrupted by tantalizing “almost risk-free” profits. One of the most notorious failures in recent years is that of Long Term Capital Management (LTCM).

LTCM was a hedge fund run by a team of top investors, including two who won Nobel Prizes in economics for their work on pricing assets, which made immense profits in the mid-1990s through a complex bond price arbitrage. In the summer of 1998, however, Russia defaulted on a number of its bonds, causing investors to shift their holdings of bonds in Europe and Japan into U.S.

Treasury bonds, which were considered the world’s safest. Though world bond prices eventually returned to values more in line with economic fundamentals, this flight away from European and Japanese bonds resulted in a \$3.5 billion bailout and the fund was closed for good by early 2000. LTCM’s bond purchases were not really arbitrage at all, since there was unhedged risk that allowed a small chance for catastrophic losses.

The moral? True arbitrage opportunities are a rarity in the real world. Many of them would be better described as entrepreneurial opportunities that may prove profitable but also carry with them real risk. So the next time someone presents you with a “can’t-lose” scheme that seems too good to be true, act like an economist and keep on walking past that illusory profit.

RF

