



Todd Pulvino — ASSISTANT PROFESSOR OF FINANCE, KELLOGG SCHOOL OF MANAGEMENT, NORTHWESTERN UNIVERSITY

# Arbitrage in Equity Markets

Attractive returns are not without risks.

2002 AIC CONFERENCE ■ Queen's Landing, Niagara-on-the-Lake, Ontario

**Systematic risk** for a particular investment strategy is typically measured by beta. Because many equity arbitrage strategies have low-beta estimates, they are often referred to as 'market neutral.' However, one of the implicit assumptions embedded in typical beta estimations is that strategy returns are linearly related to market returns. For some equity arbitrage strategies, this is an unwise assumption.

## Estimating beta

In the case of merger arbitrage, beta that is estimated using the capital asset pricing model (CAPM) is approximately 0.2. If a non-linear model rather than a linear one is used to estimate beta, a different risk profile is revealed. The merger arbitrage beta estimated in flat and appreciating markets is close to zero. But the beta estimated in significantly depreciating markets is 0.5.

Merger arbitrage returns are similar to those obtained from a strategy consisting of selling out-of-the-money index put options. Because of this option-like feature, linear models such as the CAPM cannot be used to characterize the risk or measure the risk-adjusted returns (alpha) from merger arbitrage.

Interestingly, the short-put feature of merger arbitrage returns is apparent in monthly returns, but it diminishes as the horizon for measuring the returns increases. This suggests much of the systematic risk associated with monthly merger arbitrage returns can be eliminated by maintaining a long investment horizon.

## When long horizons turn short

While long horizons may be appealing from a theoretical point of view, they are often difficult to implement. Negative stub value investments—common during the technology bubble—provide an example of how investments with a long horizon can be suddenly, and intentionally, transformed into short horizon investments.

Negative stub values arise when a publicly traded parent company owns a substantial stake in a subsidiary

with shares that are also publicly traded. For a variety of reasons, the implied market value of the parent's stake in the subsidiary can actually exceed the total value of the parent. In essence, the whole is worth less than the sum of the parts.

More surprising, even when the parent company's managers seek to eliminate the negative value of the stub assets by announcing their intention to spin off their subsidiary shares, a negative stub value can persist. From an arbitrageur's perspective, a negative stub value—combined with the parent's announced intention to distribute subsidiary shares—provides a clear opportunity for profit. By purchasing the parent company's shares, short selling the subsidiary's shares and waiting the usual six months for the parent company to distribute the subsidiary shares, the arbitrageur can own the parent's stub assets for free.

The risk inherent in this trade is that the stub value might further decline before it turns positive. An inadequately diversified arbitrageur employing too much financial leverage could face margin calls that he or she is unable to meet. If the arbitrageur is forced to liquidate at the wrong time, the trade with an intended six-month horizon and a large profit could turn into a six-week trade with a large loss.

## Reducing risk

The risk of a catastrophic margin call can be reduced by diversifying across investments. This is easiest when there are many situations in which to invest. However, pricing discrepancies across investments are often driven by the same underlying factor, such as Internet valuations. The result is that an apparently well-diversified portfolio can prove to be highly concentrated at exactly the wrong time.

While equity arbitrage can produce attractive risk-adjusted returns, these returns come with significant systematic and idiosyncratic risk. Diversification, low leverage and long investment horizons can mitigate both types of risk. ■