The hidden costs of trade execution

Most investors understand brokerage fees as a cost of doing business but SUBHRENDEU RATH says there are hidden costs that need to be taken into account.

Trade execution cost is an important element of investment management processes in maintaining superior returns from an investment portfolio. For an investment manager, inappropriate trade execution can result in a significant impact on the investment return generated by an otherwise successful investment strategy. Despite its importance, execution costs are not well understood among practitioners and money managers.

Unlike brokerage commissions which are observable and are reported to a trader, execution costs are implicit in nature. These implicit costs arise because trading itself can have an impact on the prices as large buy or sell orders temporarily push prices up or down. There are also missed opportunity costs for a trader when a trader is unable to execute orders in a timely manner.

While explicit transaction costs such as brokerage, fees and taxes are easily measured, implicit execution costs are difficult to measure as they require estimates and analyses of what the price would have been had the trade not taken place. Nevertheless, the execution costs are significant and a trader must take into consideration these costs while executing trades in order to provide a best execution of the trade. This article draws attention to various components of execution costs and the factors that influence them.

Measures of execution costs

Execution costs are hidden but they arise because of the following reasons. The execution price differs from the ‘true’ market price because quoted prices are discrete and rounded for convenience and convention; the size of an order induces price concession or premium; and the price discovery process in the market is inherently dynamic and an imperfect process.

The simplest measure of the trading cost is the quoted bid-ask spread which measures the cost of a round-trip trade. The quoted half spread is measured as

\[ \text{Quoted half spread} = 100 \times \frac{(A-B)}{2M} \]

where A and B are the posted bid and ask prices for security and M is the quote mid-point. Since at any given point of time, the quoted spread measures a round-trip trade of instantaneous buy and sell, ‘half’ measures are employed to indicate the cost of one-directional trade.

However, trades occur frequently at prices within the posted bid and ask quotations. A possible cause of large quoted spreads is that they are initial points to begin negotiations and not the actual price at which the trades are executed. Therefore, a quoted spread can misrepresent execution costs due to trades occurring within the quotes. A useful measure which accounts for the savings due to trading within quotations is the effective half spread. A measure of effective half spread is

\[ \text{Effective half spread} = 100 \times \frac{|P-M|}{M} \]

where P is the transaction price for security and M is the midpoint of the most recently posted bid and ask quotes, and D is equals one for a buyer initiated order and negative one for a seller initiated order. The mid-point value M proxies for the asset’s pre-trade economic value. The effective half spread is the percentage difference between the trade price and the quote midpoint and is a superior measure of execution costs in the presence of

SUBHRENDEU RATH
Department of Finance and Banking
Curtin University of Technology
trading occurring within the quoted spreads.

Informed traders can trade on either side of the trade to take advantage of their private information. The impact of their trade is measured by the amount market participants adjust bid-ask spread after a trade has occurred. The effect is known as price impact and is measured as

\[
\text{Price impact} = 100^*D^* (V - M)
\]

where V is true economic value of the stock after the trade. Most research studies follow the practice of using the next period closing price for V. For a dealer, the revenue left after paying for the price impact is the market-making revenue net of adverse information costs. This net market-making revenue is denoted as realised half spread and is measured simply as

\[
\text{Realised half spread} = \text{Effective half spread} - \text{price impact} = 100^*D^* (P - V)/M
\]

An example will illustrate these execution costs. Assume that the market for a share is quoted at 9.17 for ask and 9.11 for bid. The stock has a quoted half spread of 3 cents with the quote midpoint at the time of quote at 9.14. Suppose a trade occurs at 9.12. Since the trade is below mid-point, we can make a reasonable assumption that the trade is due to execution of a sell order. Accordingly, the effective spread is 2 cents which is the difference between pre-trade quote midpoint of 9.14 and the trade price of 9.12. Assuming that the sell trade at 9.12 conveys some information about the underlying economic value of the stock, the post-trade quote is likely to be revised accordingly. If the post-trade quote mid-point is 9.13, then the price impact of the trade is 1 cent which is the difference between 9.14 and 9.13. For the market maker, the realised spread, which measures the spread net of the cost of information of price impact, is 1 cent.

The effective spread in the above example is less than the quoted half spread as the trade occurs within the quote. However, it is quite possible that a trade could occur outside the quoted spread because of large price impact. In such cases the price impact would subsume the realised spread.

The price impact component, from an information perspective, is the estimate made by dealers conditional on the next trade being either a buy or sell order. This is the part of the bid-ask spread that compensates dealers for losses they suffer when trading with informed traders. The effective spread is a simple estimate that measures the implicit cost of round-trip trading when quotes do not change. When a trader buys at ask and sells at bid, the trader has incurred a round-trip two-trade execution. When trades take place within the spread resulting in a price improvement over the quoted price, perhaps due to negotiation, the effective spread is smaller than the quoted spread. Similarly, a large order may require execution outside the quoted spread making the effective spread larger than the quoted spread.

Realised spread and effective spread are the same when quotes do not change. Traders, however, infer information from order types (buy or sell) and size of orders (small or large) and change prices in response to arrival of orders. Realised spreads therefore tend to be smaller than the effective spreads. The difference between effective and realised spread measures the price impact and signifies the dealer’s loss to well-informed traders.

Empirical estimates of these costs show that price impact is the most dominant component of execution costs. In one US study, the price impact component is about 0.29% of an average stock price while the corresponding percentage for the realised spread is 0.10%. In an Australian study, Rath (2004) reported that the price impact for an Australian stock is 0.24%. The price impact component is related to the size of the stock (the larger the company the smaller the impact) and the volatility of stock price (greater volatility will induce higher price impact).

Researchers have shown that price impact can be decomposed into permanent and temporary components. The permanent component is the amount by which the traders revise their value of the stock based on the trade. The temporary component reflects the immediate discount necessary to facilitate a trade. For a portfolio manager, this distinction can be important. For example, an index fund manager can potentially avoid the permanent price impact by choosing counterparties who may be aware of the intention of the index fund manager.

**Conclusion**

Understanding execution costs is important since they can significantly erode investment performance. Increased competition in the industry will make transaction costs more important. Although portfolio decisions
and trade executions are commonly separated, the two processes should be integrated for better performance results. Portfolio managers should be aware of execution costs as well as associated costs in order to determine how much they can trade and thus optimise portfolio values. It may be useful for investment managers to let traders know the rationale behind trading so that traders can formulate sound trading strategies. For example, information based trading decisions may incur high execution costs but they can avoid higher opportunity costs. On the other hand, if the trade is solely for liquidity reasons, an appropriate trading strategy can prevent price impact costs. Effective trade executions complement superior portfolio composition, and devoting resources to effective trade executions can yield superior performance for investment managers.

References


