



Trading Costs and Taxes

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The Components of Trading Costs

- *Brokerage Cost*: This is the most explicit of the costs that any investor pays but it is usually the smallest component.
- *Bid-Ask Spread*: The spread between the price at which you can buy an asset (the dealer's ask price) and the price at which you can sell the same asset at the same point in time (the dealer's bid price).
- *Price Impact*: The price impact that an investor can create by trading on an asset, pushing the price up when buying the asset and pushing it down while selling.
- *Opportunity Cost*: There is the opportunity cost associated with waiting to trade. While being a patient trader may reduce the previous two components of trading cost, the waiting can cost profits both on trades that are made and in terms of trades that would have been profitable if made instantaneously but which became unprofitable as a result of the waiting.

Simple Evidence of a Trading Cost Drag

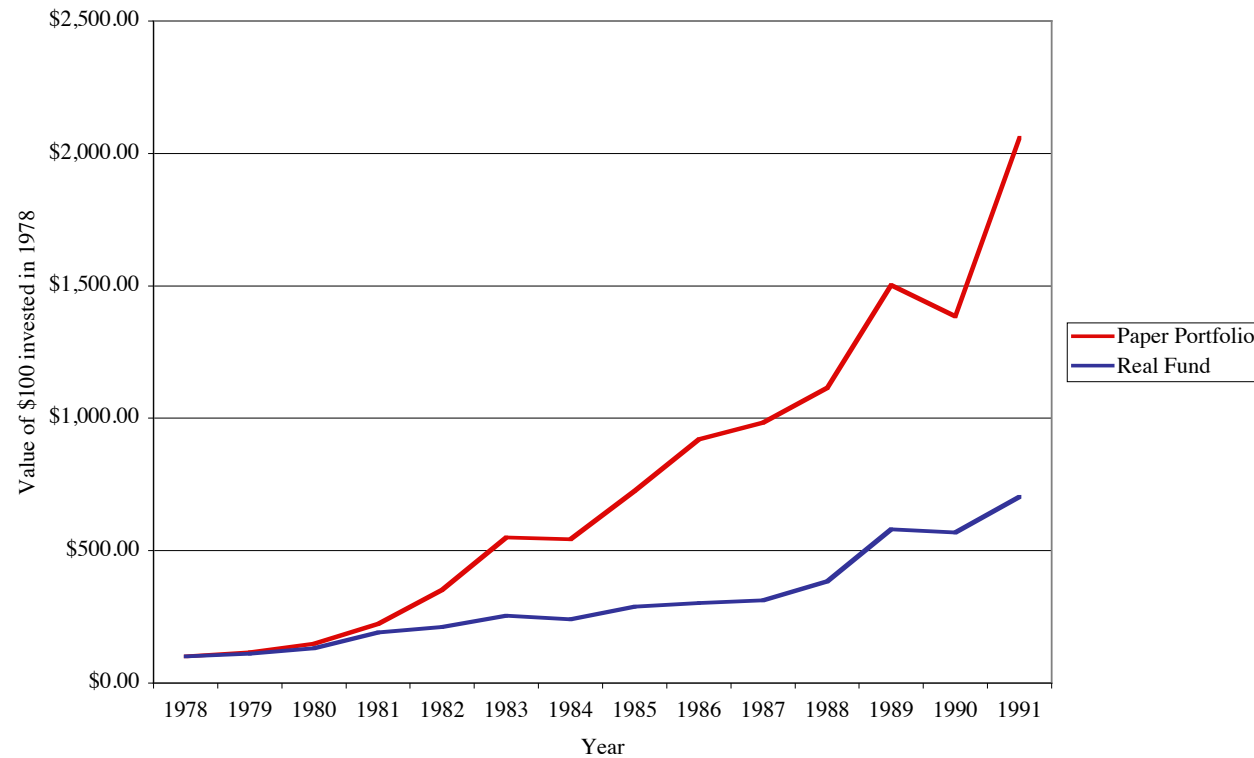
- Active money managers trade because they believe that there is profit in trading, and the return to any active money manager has three ingredients to it:

Return on active money manager = Expected Return_{Risk} + Return from active trading - Trading costs

- The average active money manager makes about 1% less than the market. If we assume that the return to active trading is zero across all active money managers, the trading costs have to be roughly 1%. If we believe that there is a payoff to active trading, the trading costs must be much higher.

Many a slip... The Value Line experience..

Figure 5.1: Value Line - Paper Portfolio versus Real Fund



Why is there a bid-ask spread?

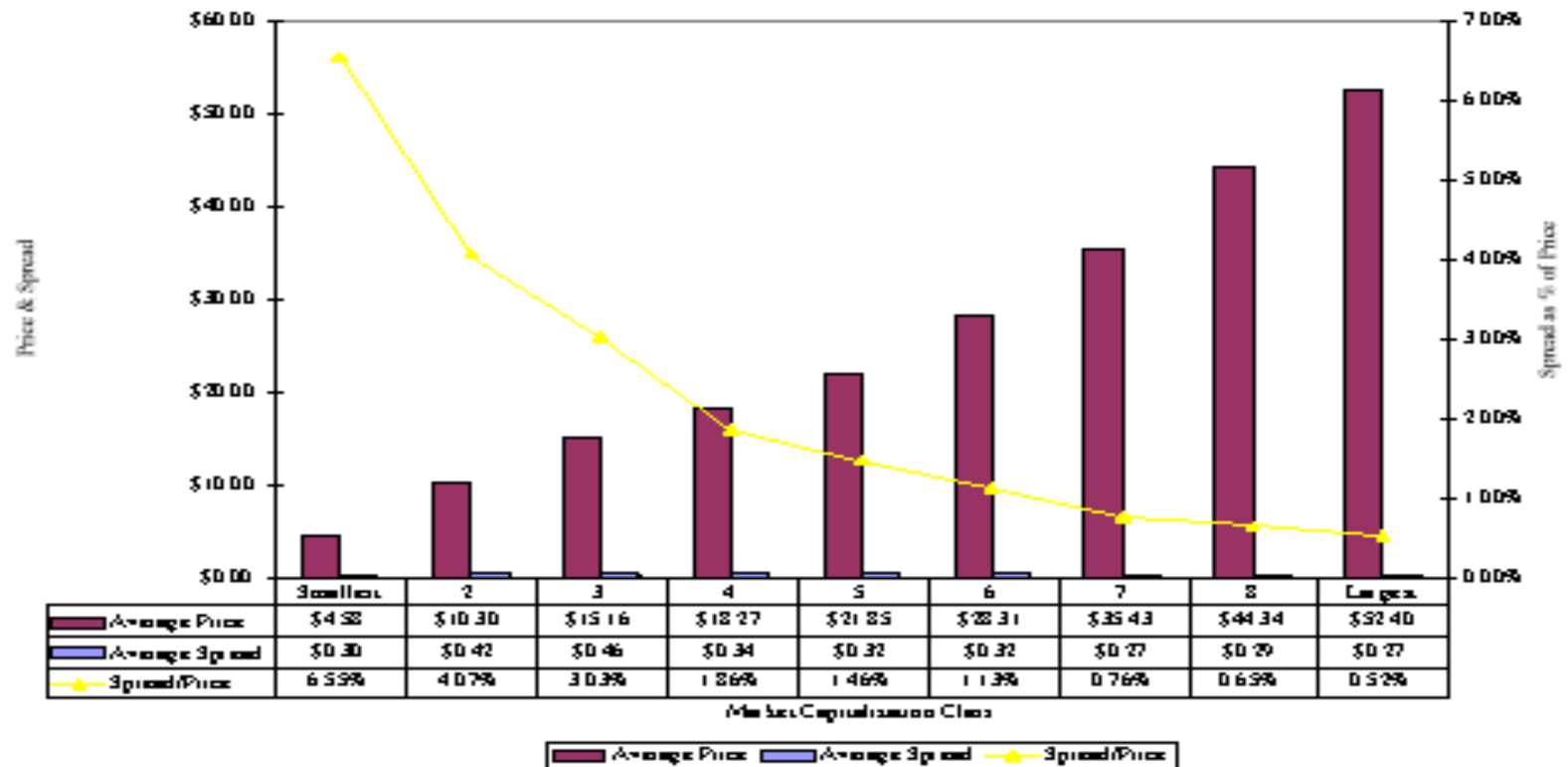
- In most markets, there is a dealer or market maker who sets the bid-ask spread, and there are three types of costs that the dealer faces that the spread is designed to cover.
 - The first is the risk cost of holding inventory;
 - the second is the cost of processing orders and
 - the final cost is the cost of trading with more informed investors.
- The spread has to be large enough to cover these costs and yield a reasonable profit to the market maker on his or her investment in the profession.

Factors determining the bid-ask spread

1. Liquidity: More liquid stocks have lower bid-ask spreads.
2. Ownership structure: Stocks with increases in institutional activity report higher bid-ask spreads (perhaps because institutional investors tend to be more likely to be informed?)
3. Riskiness: Riskier stocks tend to have higher bid-ask spreads
4. Price level: The spread as a percent of the price increases as price levels decrease.
5. Information transparency & corporate governance: Bid-ask spreads tend to increase as information becomes more opaque (less transparent) and as corporate governance gets weaker.
6. Market microstructure: The exchange on which an asset is traded can affect bid-ask spreads as does the mode of trading: electronic versus floor trading, for instance.

How big is the bid ask spread for US stocks? Varies by market cap

Figure 5.2: Prices and Spreads by Market Cap



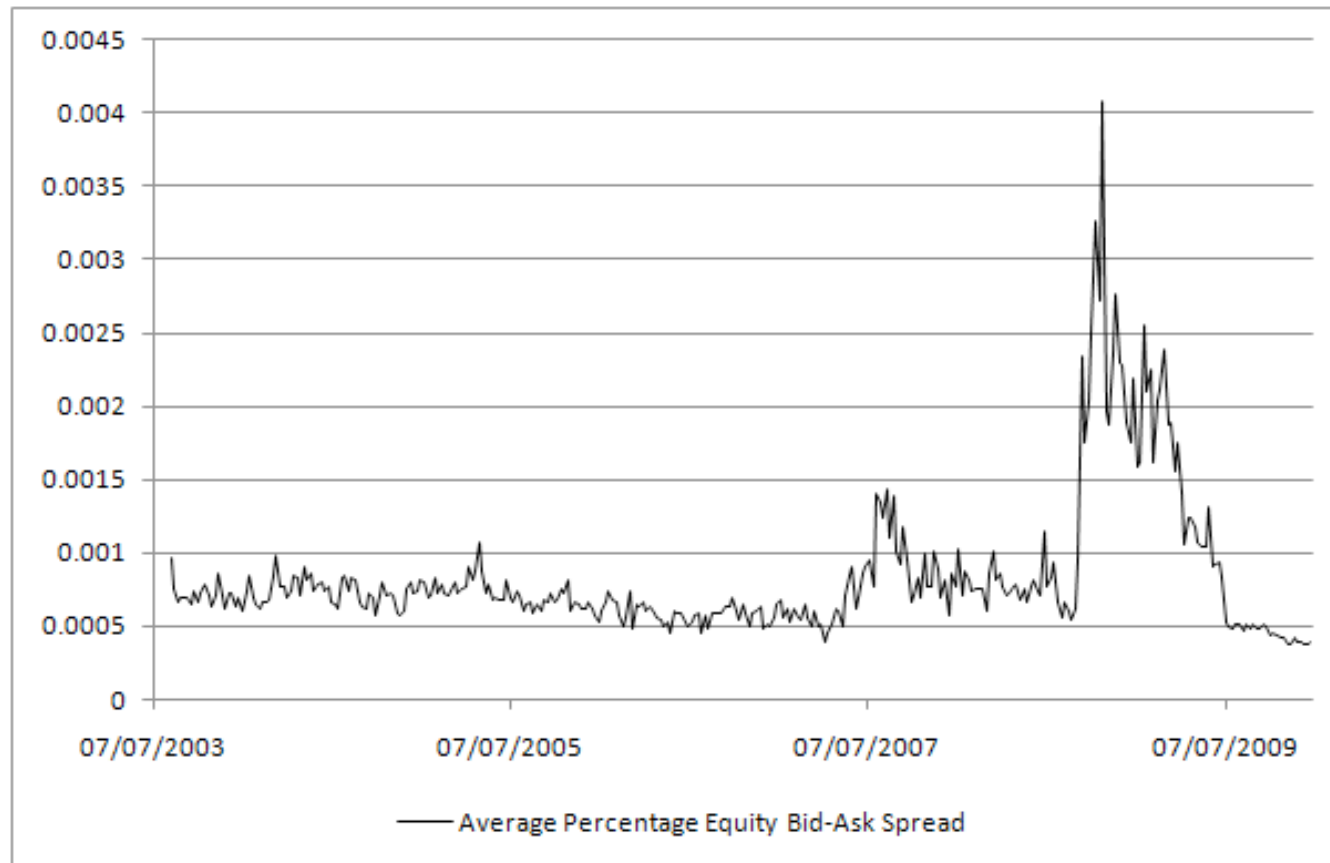
More on variation in spreads across US stocks...

- Price level: Lower priced stocks have substantially higher spreads (as a percent of stock price) than higher priced stocks. In studies of bid ask spreads around stock splits, the spread as a percent of the stock price just before and after stock splits, the spread cost (as a percent of the stock price) increases significantly after stock splits.
- Trading volume: A study found that the stocks in the top 20% in terms of trading volume had an average spread of only 0.62% of the price while the stocks in the bottom 20% had a spread of 2.06%.
- Ownership structure: As insider holdings increase, as a percent of total stock outstanding, bid ask spreads increase, reflecting lower liquidity (since insiders don't trade their holdings as frequently) and a fear that insiders may know more about the company than other investors (information asymmetry).

Spreads in other equity markets

Country	Bid-ask spread	Turnover	% Days with Zero trading volume
Argentina	2.55%	0.08	23.87%
Brazil	4.68%	1.12	29.10%
Chile	3.79%	0.17	34.19%
Mexico	2.83%	0.17	20.85%
China	0.31%	1.31	2.55%
Korea	1.39%	3.16	4.14%
Phillipines	6.61%	0.68	20.97%
Taiwan	0.63%	1.32	0.48%
India	1.90%	0.43	3.63%
Indonesia	6.17%	0.44	21.66%
Malaysia	2.43%	0.34	8.67%
Singapore	3.83%	0.37	11.61%
Thailand	2.58%	1.03	13.39%
Greece	1.81%	0.33	2.12%
Poland	1.42%	1.20	4.94%
Portugal	2.05%	0.25	7.43%
Russia	3.17%	0.15	40.06%
Turkey	1.16%	8.21	1.05%
Israel	4.17%	0.15	22.14%
South Africa	4.14%	0.16	18.44%
All	2.16%	1.73	8.88%

Variation in equity spreads over time... Effects of crisis on 51 liquid US companies



More Evidence of Bid-Ask Spreads

- The spreads in U.S. government securities are much lower than the spreads on traded stocks in the United States. For instance, the typical bid-ask spread on a Treasury bill is less than 0.1% of the price.
- The spreads on corporate bonds tend to be larger than the spreads on government bonds, with safer (higher rated) and more liquid corporate bonds having lower spreads than riskier (lower rated) and less liquid corporate bonds.
- While the spreads in the traded commodity markets are similar to those in the financial asset markets, the spreads in other real asset markets (real estate, art...) tend to be much larger.

Role of Spread in Investment Strategies

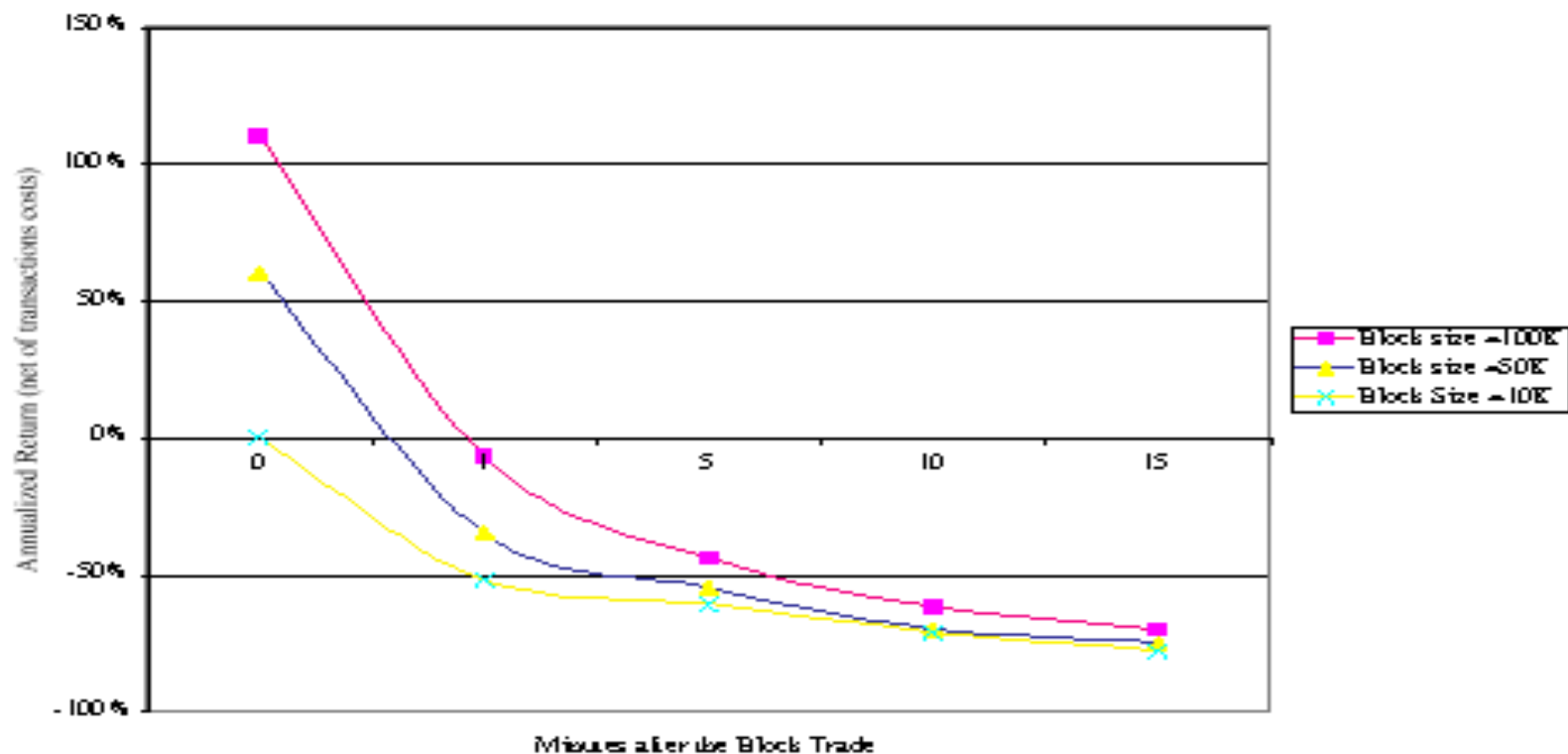
- Strategies that involve investing in small-cap stocks or low-priced stocks will be affected disproportionately by the costs created by bid-ask spreads.
- As an example, consider the strategy of buying “losers”. DeBondt and Thaler(1985) present evidence that a strategy of buying the stocks which have the most negative returns over the previous year and holding for a five-year period earns significant excess returns. A follow-up study, however, noted that many of these “losers” were low-priced stocks, and that putting in a constraint that the prices be greater than \$10 on this strategy resulted in a significant drop in the excess returns.
 - Does the Stock Market Overreact? by F.M DeBondt and R. Thaler in Journal of Finance (July 1985)

Why is there a price impact?

- The first is that markets are not completely liquid. A large trade can create an imbalance between buy and sell orders, and the only way in which this imbalance can be resolved is with a price change. This price change, that arises from lack of liquidity, will generally be temporary and will be reversed as liquidity returns to the market.
- The second reason for the price impact is informational. A large trade attracts the attention of other investors in that asset market because it might be motivated by new information that the trader possesses. This price effect will generally not be temporary, especially when we look at a large number of stocks where such large trades are made. While investors are likely to be wrong a fair proportion of the time on the informational value of large block trades, there is reason to believe that they will be right almost as often.

How large is the price impact? Evidence from Studies of Block Trades of large companies

Figure 5.3: Annualized Returns from Investing after Block trades



Limitations of the Block Trade Studies

- These and similar studies suffer from a sampling bias - they tend to look at large block trades in liquid stocks on the exchange floor – they also suffer from another selection bias, insofar as they look only at actual executions.
- The true cost of market impact arises from those trades that would have been done in the absence of a market impact but were not because of the perception that it would be large.

Round-Trip Costs (including Price Impact) as a Function of Market Cap and Trade Size

	<i>Dollar Value of Block (\$ thousands)</i>								
<i>Sector</i>	<i>5</i>	<i>25</i>	<i>250</i>	<i>500</i>	<i>1000</i>	<i>2500</i>	<i>5000</i>	<i>10000</i>	<i>20000</i>
Smallest	17.30%	27.30%	43.80%						
2	8.90%	12.00%	23.80%	33.40%					
3	5.00%	7.60%	18.80%	25.90%	30.00%				
4	4.30%	5.80%	9.60%	16.90%	25.40%	31.50%			
5	2.80%	3.90%	5.90%	8.10%	11.50%	15.70%	25.70%		
6	1.80%	2.10%	3.20%	4.40%	5.60%	7.90%	11.00%	16.20%	
7	1.90%	2.00%	3.10%	4.00%	5.60%	7.70%	10.40%	14.30%	20.00%
8	1.90%	1.90%	2.70%	3.30%	4.60%	6.20%	8.90%	13.60%	18.10%
Largest	1.10%	1.20%	1.30%	1.71%	2.10%	2.80%	4.10%	5.90%	8.00%

Determinants of Price Impact

- Looking at the evidence, the variables that determine that price impact of trading seem to be the same variables that drive the bid-ask spread. That should not be surprising. The price impact and the bid-ask spread are both a function of the liquidity of the market. The inventory costs and adverse selection problems are likely to be largest for stocks where small trades can move the market significantly.
- In many real asset markets, the difference between the price at which one can buy the asset and the price at which one can sell, at the same point in time, is a reflection of both the bid-ask spread and the expected price impact of the trade on the asset. Not surprisingly, this difference can be very large in markets where trading is infrequent; in the collectibles market, this cost can amount to more than 20% of the value of the asset.

Impact on Investment Strategy

- The fact that assets which have high bid-ask spreads also tend to be assets where trading can have a significant price impact makes it even more critical that we examine investment strategies that focus disproportionately in these assets with skepticism.
- Since you can reduce the price impact of trades by breaking them up into smaller trades, the price impact cost is likely to be greatest for investment strategies that require instantaneous trading.
- The price impact effect also will come into play when a small portfolio manager, hitherto successful with an investment strategy, tries to scale up the strategy

The Cost of Waiting

- If there was no cost to waiting, even a large investor could break up trades into small lots and buy or sell large quantities without affecting the price or the spread significantly.
- There is, however, a cost to waiting. In particular, the price of an asset that an investor wants to buy because he or she believes that it is undervalued may rise while the investor waits to trade, and this, in turn, can lead to one of two consequences.
 - One is that the investor does eventually buy, but at a much higher price, reducing expected profits from the investment.
 - The other is that the price rises so much that the asset is no longer undervalued and the investor does not trade at all. A similar calculus applies when an investor wants to sell an asset that he or she thinks is overvalued.

Determinants of the Cost of Waiting

- *Is the valuation assessment based upon private information or is based upon public information?* Private information tends to have a short shelf life in financial markets, and the risks of sitting on private information are much greater than the risks of waiting when the valuation assessment is based upon public information.
- *How active is the market for information?* The risks of waiting, when one has valuable information, is much greater in markets where there are other investors actively searching for the same information.
- *How long term or short term is the strategy?* Short term strategies will be affected more by the cost of waiting than long term strategies.
- *Is the investment strategy a “contrarian” or “momentum” strategy?* In a contrarian strategy, where investors are investing against the prevailing tide, the cost of waiting is likely to be smaller than in a momentum strategy.

The Overall Cost of Trading: Small Cap versus Large Cap Stocks

<i>Market Capitalization</i>	<i>Implicit Cost</i>	<i>Explicit Cost</i>	<i>Total Trading Costs (NYSE)</i>	<i>Total Trading Costs (NASDAQ)</i>
Smallest	2.71%	1.09%	3.80%	5.76%
2	1.62%	0.71%	2.33%	3.25%
3	1.13%	0.54%	1.67%	2.10%
4	0.69%	0.40%	1.09%	1.36%
Largest	0.28%	0.28%	0.31%	0.40%

Trading costs on real assets

- The smallest transactions costs are associated with commodities – gold, silver or diamonds – since they tend to come in standardized units.
- With residential real estate, the commission that you have to pay a real estate broker or salesperson can be 5-6% of the value of the asset. With commercial real estate, it may be smaller for larger transactions.
- With fine art or collectibles, the commissions become even higher.
- The costs tend to be higher because:
 - There are far fewer intermediaries in real asset businesses than there are in the stock or bond markets
 - The products are not standardized. In other words, one Picasso can be very different from another, and you often need the help of experts to judge value and arrange transactions. This adds to the cost in the process.

Trading costs on private equity/businesses

1. *Liquidity of assets owned by the firm*: A private firm with significant holdings of cash and marketable securities should have a lower illiquidity costs than one with assets for which there are relatively few buyers.
2. *Financial Health and cashflows of the firm*: A private firm that is financially healthy should be easier to sell than one that is not healthy.
3. *Possibility of going public in the future*: The greater the likelihood that a private firm can go public in the future, the lower should be the illiquidity cost.
4. *Size of the Firm*: If we state the illiquidity cost as a percent of the value of the firm, it should become smaller as the size of the firm increases.

The Management of Trading Costs

Step 1: Develop a coherent investment philosophy and a consistent investment strategy

- The portfolio managers who pride themselves on style switching and moving from one investment philosophy to another are the ones who bear the biggest burden in terms of transactions costs, partly because style switching increases turnover and partly because it is difficult to develop a trading strategy without a consistent investment strategy.

Managing Trading Costs: II

Step 2: Estimate the cost of waiting given the investment strategy

- The cost of waiting is likely to be small for long-term, contrarian strategies and greater for short-term, information-based and momentum strategies.
- If the cost of waiting is very high, then the objective has to be to minimize this cost, which essentially translates into trading as quickly as one can, even if the other costs of trading increase as a consequence.

Managing Trading Costs: III

Step 3: Look at the alternatives available to minimize transactions costs, given the cost of waiting.

- Take advantage of the alternatives to trading on the exchange floor.
- Trade portfolios rather than individual stocks, when multiple orders have to be placed.
- Use technology to reduce the paperwork associated with trading and to keep track of trades which have already been made.
- Be prepared prior to trading on ways to control liquidity and splits between manual and electronic trading. This “pre-trade” analysis will allow traders to identify the most efficient way to make a trade.
- After the trade has been executed, do a post-trade analysis, where the details of the trade are provided in addition to a market impact analysis, which lists among other information, the benchmarks that can be used to estimate the price impact.

Managing Trading Costs: IV

Step 4: Stay within a portfolio size that is consistent with the investment philosophy and trading strategy that has been chosen

- While it is tempting to most portfolio managers to view portfolio growth as the fruit of past success, there is a danger that arises from allowing portfolios to become too big.
- How big is too big? It depends upon both the portfolio strategy that has been chosen, and the trading costs associated with that strategy. While a long-term value investor who focuses well-known, large-capitalization stocks might be able to allow his or her portfolio to increase to almost any size, an investor in small-cap, high growth stocks or emerging market stocks may not have the same luxury, because of the trading costs we have enumerated in the earlier sections.

Managing Trading Costs: V

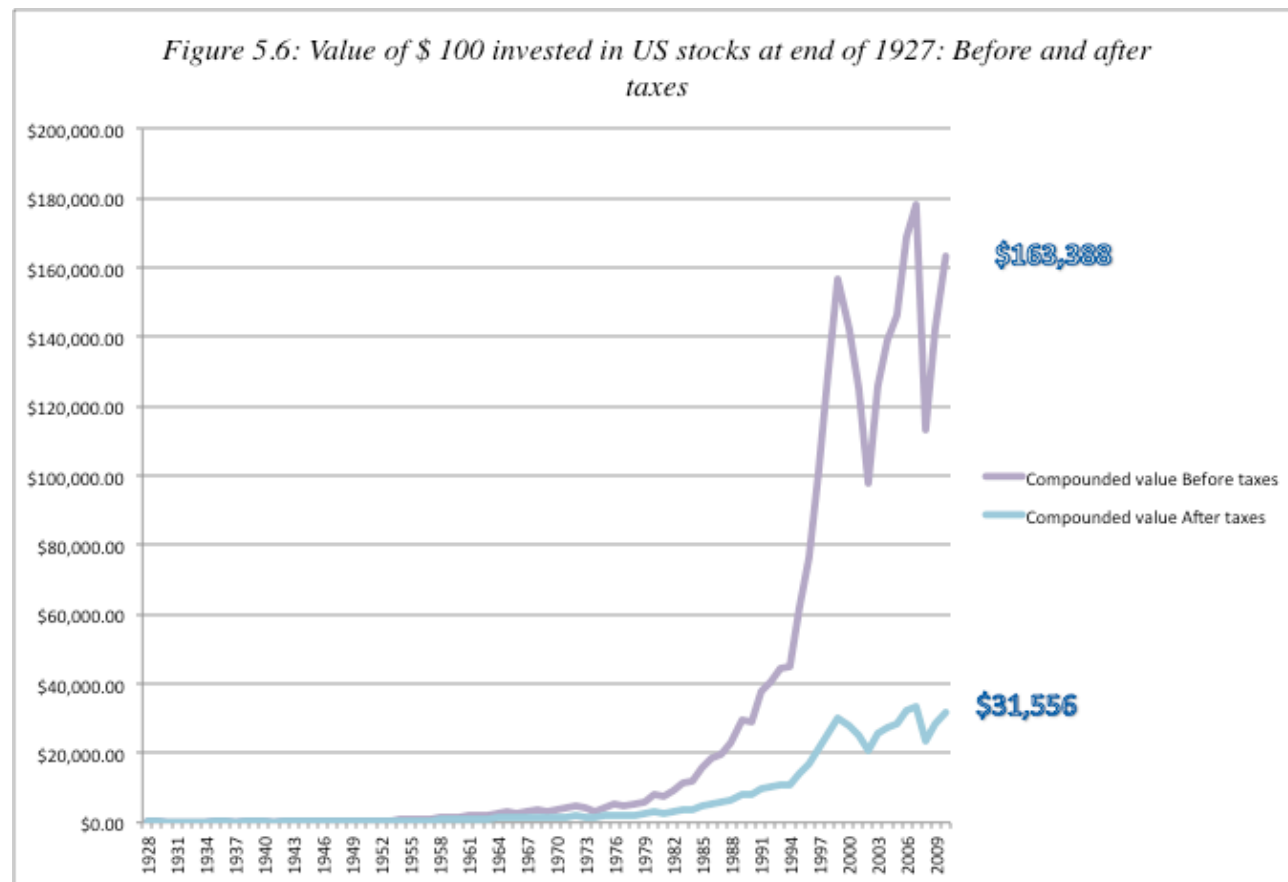
Step 5: Consider whether your investment strategy is yielding returns that exceed the costs

- The ultimate test of an investment strategy lies in whether it earns excess returns after transactions costs. Once an investor has gone through the first four steps, the moment of truth always arrives when the performance of the portfolio is evaluated.
- If a strategy consistently delivers returns that are lower than the costs associated with implementing the strategy, the investor has one of two choices - he or she can switch to a passive investing approach (such as an index fund) or to a different active investing strategy, with higher expected returns or lower trading costs or both.

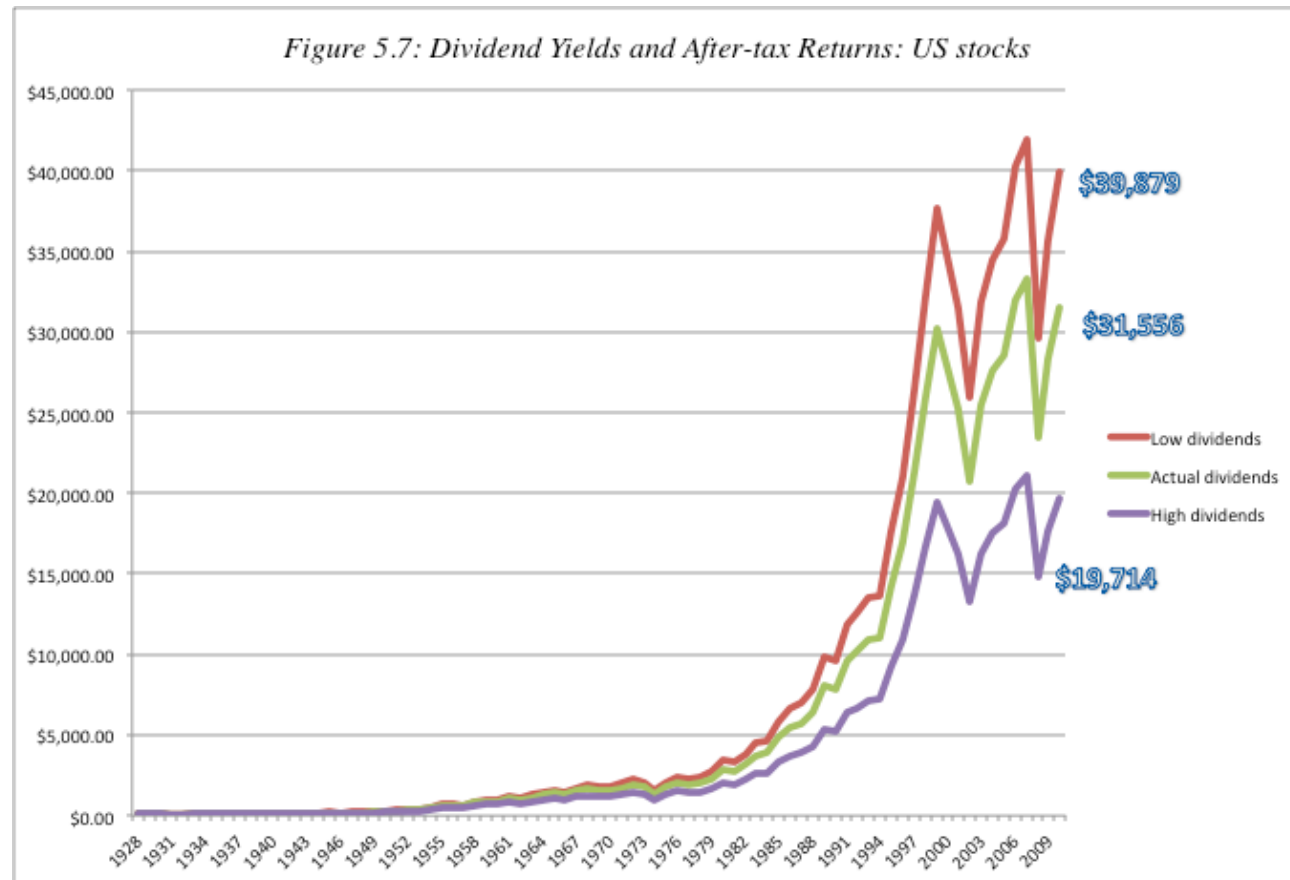
Why taxes matter?

- Investors get to spend after-tax income and not pre-tax income.
- Some investment strategies expose investors to a much greater tax liability than other strategies.
- To measure the efficacy of an investment strategy, we have to look at after-tax returns and not pre-tax returns.

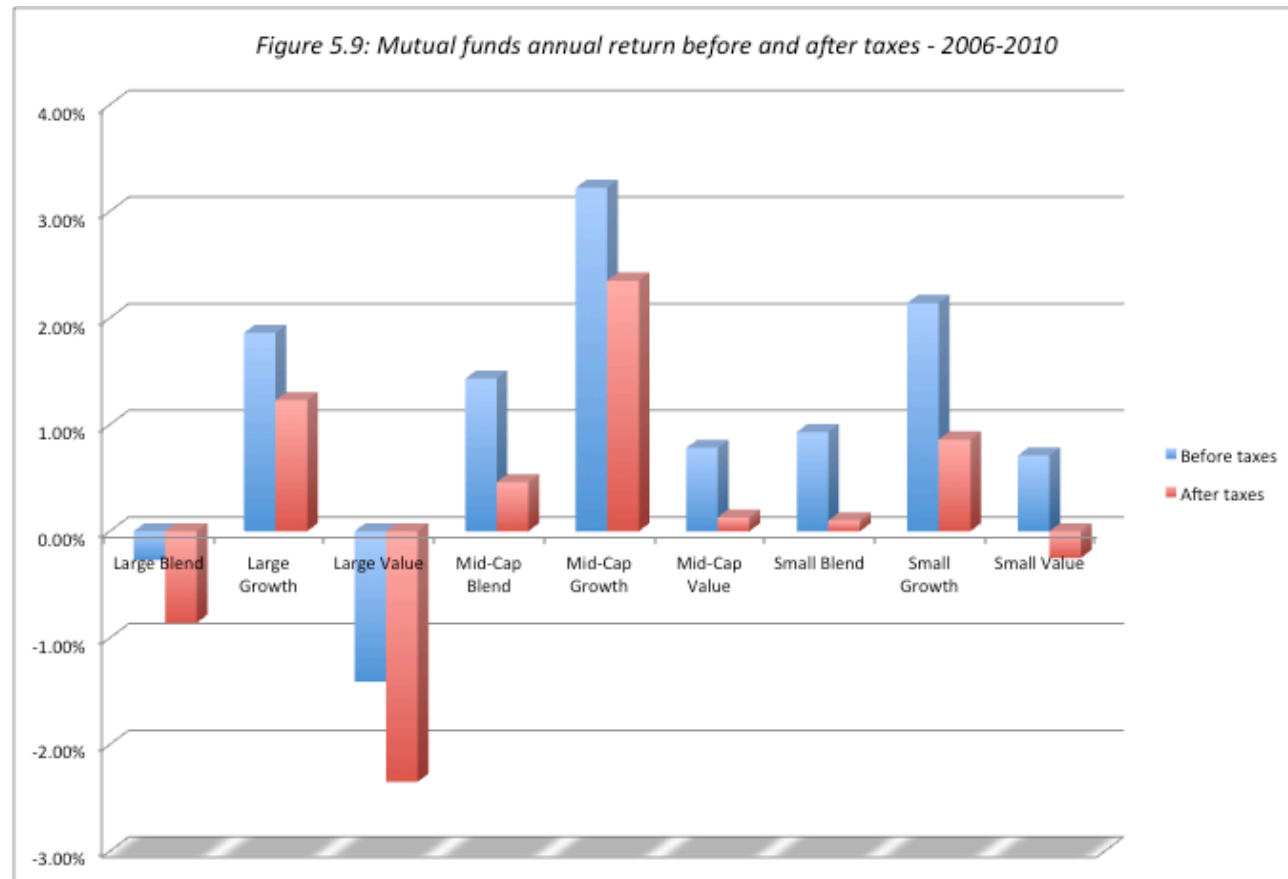
The Tax Effect: Returns on US stocks, before and after taxes



The Tax Effect and Dividend Yields



Mutual Fund Returns: The Tax Effect



Tax Effect and Turnover Ratios



How to manage taxes...

- Keep trading to a minimum: The more you trade, the higher the tax liability you will face as an investor.
- Factor in taxes when buying: When investing, take into account the expected tax drag on returns. Thus, if dividends are taxed at a rate higher than capital gains, you will pay more in taxes. If you don't need the cash from dividends, you will do better investing in stocks that deliver more price appreciation.
- Factor in taxes when selling: When trading, consider the tax effects of your trades. Match losing stock sales with capital gains.
- Don't invest just to avoid taxes: Investments that are structured primarily to avoid taxes are not only often bad investments but they are more likely to be challenged by tax authorities.