The Short Sale

As consumers, buying an item at a "bargain" price comes as a natural intuition, and the process of re-selling at a higher price is nearly as natural. The sequence "buying now to sell later" has a commercial logic to it: money is exchanged for an item now which is exchanged for money (more, presumably) later. Also as consumers, if a price is overly bombastic to our judgment, our natural intuition is to avoid buying the item in the hopes that the overzealous business will see a drop in demand and adjust the price appropriately downward. Without credit, this is the extent of the market, governed by simple supply and demand flows. With credit, there is an additional opportunity to capitalize on a market's high prices: borrowing the item to sell it now to buy it back later at a normalized price. In securities trading, this is called a ***short sale***.

The Mechanics of a Short Sale

In order to enter into a short position, a trader must acquire the security they wish to sell from a lender, as it is impossible to sell securities one does not have. The trader must enter a lending market, a market which is separate from the trading market where securities are bought and sold. In an open loan market, many lenders compete to lend their securities, causing interest rates to be determined through market competition. If a trader opts to find a loan through their broker (oftentimes the most convenient option) the broker will set the borrowing interest rate. Once the trader has accepted the terms of a loan contract, the underlying security is transferred to the trader's account where it can be sold on the open market. If a trader opts to open a short position through their broker, the loan contract, the security transfer, and the sale of the security can be conducted with one click.

Once a trader has decided to close their short position, they must buy back the security at market price, and once the security has been acquired from the market, the trader may fulfill their obligation to the lender by initiating the

security's transfer. After the settlement, profit or loss can be determined. Just as in the determination of a *long* position, profit from a *short* position is measured by the difference between the sale price and the cost basis. The additional costs dictated by the loan agreement are factored into the cost basis upon settlement.

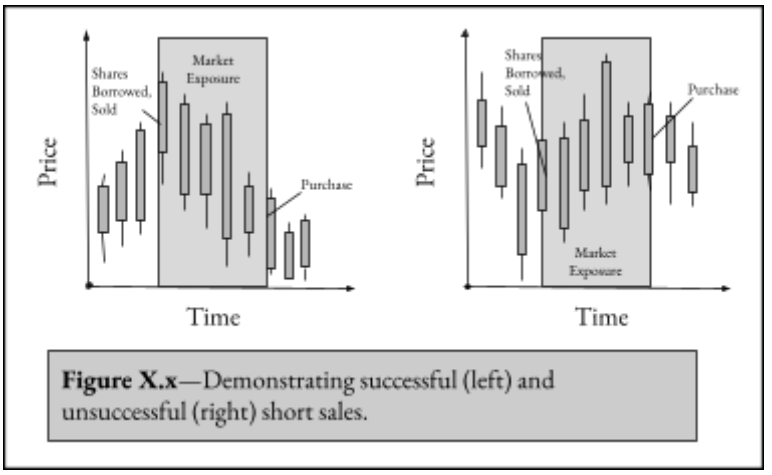

Figure X.x—Demonstrating successful (left) and unsuccessful (right) short sales.

The Augmented Risk Profile of Short Selling

Perhaps the most felt risk for the duration of a short sale is the expense of interest; particularly when a short position is faring poorly, interest only heightens an investor's sense of impending loss. For this reason, it is important that the investor's conviction is initially high, then unwavering but subject to evidence. The investor's time horizon for their position also must be determinedly rigid. Typically, interest is deducted on behalf of the lender from an investor's account at the close of every trading day as long as the short position remains open. Interest expense is therefore highly regular and predictable, requiring only a simple shift (or repeated shifting, as time goes on) of the investor's risk function as it overlays market variance. If interest expense were to be excluded from the function of risk, the likelihood of profitability would be skewed in favor of profitable outcomes, granting the investor a false

sense of optimism to either open a short position or hold on to one longer than they should.

A second expense, in some cases as impactful as interest expense though less frequently applied, is a short seller's obligation to pay the lender the equivalent of any dividend distribution delivered to shareholders. Since the lender maintains the rights to the underlying shares, the short seller must deliver the equivalent of the dividend distribution out of their own pocket, though they have sold the shares themselves and so do not receive any part of the dividend. Consequently, a short seller should pay attention to any upcoming dividend distribution dates that fall within the horizon they plan to hold their position and adjust their risk function according to the expected dividend amount. Once the dividend has been issued, the market—though always subject to supply and demand—devalues the share price in alignment with the cash outflow the distribution entailed. This devaluation presents itself as an *unrealized* gain to the short seller while the dividend was a *realized* loss, hiking up the short seller's cost basis (and deducting from their account whereas the gain is only hypothetical.) The unrealized gain should, at least briefly but only approximately, offset the short seller's increase in cost basis. The short seller must ensure that their basis has been adjusted by the appropriate amount (if their broker does not do so automatically); otherwise, they will overreport their profit (or underreport their loss) to the IRS.

When many investors take up the position that a security is overpriced the ratio of open short positions to traditional long positions increases; this consolidation of sentiment has a few notable effects on the market, all of which either shift or amplify the negative risk of a short sale. Most imminently, as the investor collective takes on an increasingly large short position, the supply of securities available for lending decreases. Consequently, the security's lending rates are driven up, extinguishing short sale momentum by making new short

sales prohibitively expensive. Once the lending market has caught on to the short sellers' thesis of risk, this marks the beginning of the end of the short sale trade. The risk of carrying borrowed positions compels short sellers to be more sensitive to reversal patterns. The seasoned short seller will keep their stop loss orders tight and their duration to exposure timely in order to prevent catastrophic losses, for when selling pressure diminishes, even a small amount of bid pressure is sufficient to cannibalize a long shorted movement. Such an event is called a ***short squeeze***. A short sale can even cannibalize itself, as the first sellers take profit, buying back the securities they borrowed from *'greater fool'* sellers. Any supposed alliance among short sellers is frail and transitory. A volatile chain reaction ensues as short sellers are compelled to *cover* their individual positions and increase bid volume (to the detriment of other short sellers) in the process. For this reason, short sellers should be extremely wary of entering into a new position when there is already a large short interest accumulated.

Security prices are, at all times, non-negative, but remain unbounded in the positive direction. The implication of the lower bound with regards to short sales is that the maximum return on any short position is 100%, while the potential loss is (theoretically) infinite. In contrast, a traditional "long" position has a maximum potential loss of 100%, but its reward potential is "unlimited." Thus, the risk profile of any short position is negatively skewed inherently in the comparison with its fellow long position. Supply and demand forces prevent these extreme scenarios; nevertheless, their framing is significant. The hard lower bound serves to explain the general market's long-term monotonic increase. A failed business cannot fail into the negative; the business falls into bankruptcy (and shareholders have a limited liability.) Coupled with the increased risk of borrowing, the efficacy of the short position in the long-term dwindles. The success of a short position is therefore shaped

by these constraints: the opportunity is highly specific; there is demonstrated risk of business failure or significant restructuring ensuing; the actual risk is skewed higher than popular opinion; and finally, once the actual risk is known to the populous, it will spur a significant market correction.

Finding the Proper Shorting Opportunity

Due to the proportionately large amount of risk a short sale entails, a short sale based solely on intuition is a recipe for disaster. It is vital to the success of the sale that a proper risk framework has been drawn up and analyzed thoroughly prior to opening a position, and more so than in traditional trading, the exit strategies employed within the risk framework ought to include a rigid time constraint. Establishing a risk framework requires time and attentiveness, neither of which comes at zero cost, so prior to engaging in the costly activity of wild research, a few *a priori* truths may go a long way in making the labor of discovery more productive.

Companies spend more time living (and growing, presumably) than they do dying; this is as much a fact of corporate nature as it is of life itself. Hence, successful short opportunities, which capture the dying act, are few and far between. And much like in life, while individual corporations live and eventually die, the market (like the human race) remains and continues to discover means of generating consistent and novel value. By this analogy, it is not wise to attempt to short the market overall: the market is too large in number; it is transcendent in that it cannot "die," not in a meaningful sense. Corporations, in the aggregate, have consistently generated a positive flow of value diversified across a wide spectrum of human interest; the corporation is sufficiently entrenched in the laws and culture of the land and holds significant sway among the citizens who uphold the laws. I see no reasonable likelihood that this engine would disintegrate any time soon. A successful short opportunity does not span a market, or even an industry; the focus of its attention is on an individual company, and even then, probably not a well-integrated one.

Much of the success of a short opportunity can be attributed to timing, and while it is straightforward enough to discover an imbalance of risk in retrospect, it is quite the opposite in real time while operating on imperfect information and in competition with other investors. The process is much like identifying the appropriate wave to surf: it requires the patience to allow many opportunities to pass by, it requires a degree of malleability to align oneself with the wave, and finally, it requires a willingness to subject oneself to the noise. When a short seller sees a wave approaching they must identify the components of the wave that make it worth riding. First, the wave must contain some probable discrepancy between the risk function as it is identified by the short seller and the market's consensus risk function reflected in the actual price. This "expected" discrepancy must at least equal the loss potential as well as the costs of opening and maintaining the short position. Secondly, the short seller must identify that the open short interest is relatively low to ensure that the security's market is not incredibly vulnerable to a *short squeeze*. They must continue to monitor the long/short ratio throughout the duration of the short holding period to assess their susceptibility. Finally, the risk identified by the short seller must become knowable to the market, and, upon realization, it must generate the momentum to spur the desired price correction.

Every profitable wave must have a crest. Once the obscured dimension of risk is revealed, the short seller hopes that the additional risk will cause supply and demand to cascade toward a lower consensus price—their projected price. But even in the case that the market *does* discover the short seller's additional risk, it is not guaranteed that the market will behave in the rational or predicted manner. The short seller must learn to tolerate noise in the market; even when one is right, profit is not guaranteed. Short selling is a highly technical trade. Not only are opportunities few and far between, but to identify, then capture a short sale requires full-time dedication.

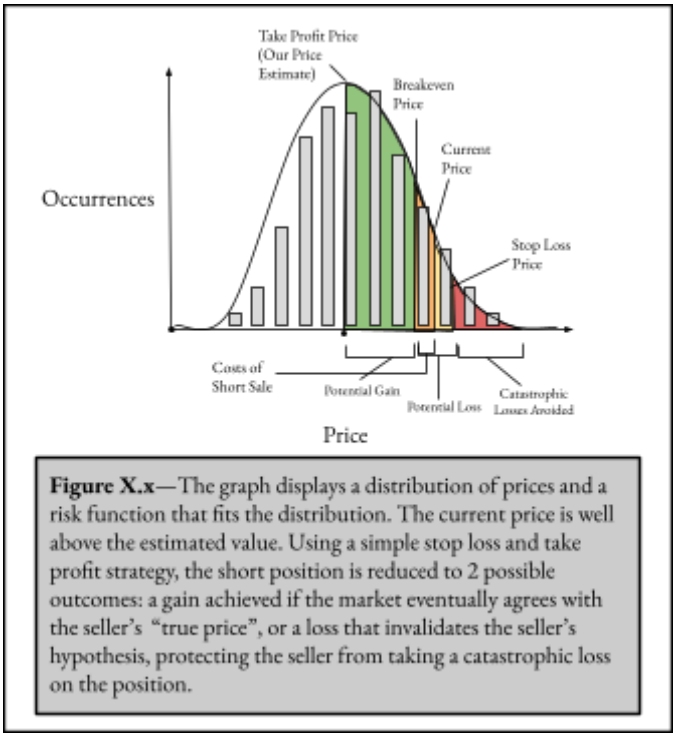

Figure X.x—The graph displays a distribution of prices and a risk function that fits the distribution. The current price is well above the estimated value. Using a simple stop loss and take profit strategy, the short position is reduced to 2 possible outcomes: a gain achieved if the market eventually agrees with the seller's "true price", or a loss that invalidates the seller's hypothesis, protecting the seller from taking a catastrophic loss on the position.

Short Sales and the Macroeconomy

Investors disagree over whether short selling fosters a healthier market or should be disallowed. The former camp argues that short sellers force the hands of reluctant investors who have abandoned financial analysis and are holding out on a dismal hope for a chance turnaround. Short sellers discount the future value of the securities they have shorted without survival bias; they see the securities for what they actually are: financial enablement for diseased companies. Those who believe short sales should be disallowed argue that "scavenging" behavior is ruthless; they argue that we have a moral obligation not to profit off of the demise of failing business. In my opinion, this argument lacks a certain depth, particularly when a macroeconomic perspective is applied.

Securities markets are not value generators. They are zero-sum: when one investor profits a loss is distributed across the market. This is the case

whether a business decays naturally or decay is stimulated by short selling. Do we also have a moral obligation to avoid taking profit when we feel price is overinflated? A decaying company consumes capital resources that could arguably be better used to stimulate growth in other healthy companies in their adolescence. Short selling elevates the market's ability for price discovery by activating a supply of "dormant" shares. New buyers enter the market with new evaluations of price, and if the short seller's hypothesis is correct, new buyers will demand a lower price from sellers. In this way, false value is expunged. The more efficiently the market can determine a company's real value, the better for the development of the macro economy.

Scenario X.x

I am an investor with a large AAL stock position, and quarterly earnings are to be announced in three days time. There are rumors that American Airlines revenue may be reported lower than expectations due to a second wave of decreased demand for flights this quarter as the COVID-19 delta variant increases customer timidity to fly for leisure. Not wishing to sell my holdings, I decide to hedge my long position by shorting AAL shares at a price of $20.48 per share, with plans to buy the shares back the day after the earnings announcement. By neutralizing a position of stock I already own, I am *"shorting against the box"*, a strategy that comes with interesting tax implications if I am not careful.

Earnings are announced, and, as predicted, flight demand has fallen significantly and will decrease revenue by a larger percentage than expected. The stock price falls below $20 per share in the after hours market session. I place an order to buy back the shares at the market open the next morning. The

> order executes for $19.78 per share. By shorting against my position, I have preserved $0.70 of value per share.

Options: the Alternative to Selling Short

It is the exercising of options, rather than short sales, that drives much of the synthetic selling volume in open markets. A trader, who owns shares in a company but is wary of the shares devaluement, can preserve their capital by selling a *call option*; the outcome will be identical to ***"shorting against the box"***. Shorting against the box is a strategy where a trader shorts a security they simultaneously own to cover their risk. In lieu of short selling, a trader could also buy *put options* (if they were wary of share devaluement and were willing to sell their underlying shares, or else were merely speculating on price movement.) Options have the effect of appearing cleaner for the purposes of capital gains taxes. The capital gains treatment of an option contract is independent of any shares the trader may own, so no (messy) updates to the cost basis of shares are required. As if this reason were not enough, buying puts has a lower capital requirement than short selling, and has a limited loss potential (up to the price of the put), whereas the loss potential of a short sale is unlimited. In most cases, an option offers superior flexibility to a short sale; hence the ubiquity of options today.