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BLOCKAGE DISCOUNTS FOR PUBLICLY TRADED STOCK

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Introduction. A common problem for estates or in divorces is how to determine the value of shares held in a publicly traded company when those shares individually constitute a large block of that company's total shares outstanding. Even though the company's shares are publicly traded, the trading volume in the market may not be large enough to absorb the sale of the large block held by the estate (or in the marital estate in the case of a divorce) without creating major downward pressure on the price of the stock. This harkens back to the simple law of supply and demand in basic economics. If there is a given level of demand for a product or service (or the stock of a public company) at a certain price, if the available supply of that product is increased, this additional supply will only be bought at a reduced price that is sufficiently lower to stimulate additional demand for it by buyers. Such is the case in holding what constitutes a large block of stock in a public company.


George Hawkins

In many cases, the fair market value of large blocks of public company shares may be worth less (and potentially substantially less) than the daily trading price quoted for regular trades of shares published in the financial section of the paper. Thus, estate administrators may substantially overpay estate taxes when a large block of publicly traded stock is involved by using the normal trading price per share on the estate tax return. The estate's attorney may know that the block warrants a discounted price, but either does not know where to turn to determine this lower value or is afraid of IRS challenges. In the equitable distribution context, family law attorneys often have no idea at all that their client might have a sufficiently large block of its stock whose value might reasonably be discounted for blockage reasons. These attorneys might mistakenly use the trading prices stated in the paper to reach a settlement, paying the ex-spouse more than the true fair market value of the stock.

Example of Blockage Discounts. The following example illustrates the concept of "blockage discounts," and why such discounts arise in the real world. This example uses the tools of the trade to quantify a real blockage discount in this specific situation. This example is **greatly simplified** and leaves out the full analysis that would be required (which would require a full valuation report to outline and support). As always, each matter is different and has unique facts, so it cannot be assumed that the use and application of techniques would be the same in other matters. While many concepts are explained and there is some math involved, do not get lost in the explanation. The point of the example is that blockage problems exist in the real world, however, they can be quantified and supported in real life situations.

The good news is that when the appropriate tools are employed, a skilled business appraiser can successfully quantify and support blockage discounts (when they are appropriate), and confidently defend them before the IRS or the courts. The bad news is that many business appraisers who claim to be able to determine blockage discounts actually lack the skill, training, or analytical knowledge to be able to do so, relying instead on arbitrarily determined discounts that will not stand up to scrutiny. Therefore, it is critical to use care in selecting a qualified business valuation

professional to perform a blockage valuation.

The Challenge- Valuing Shares of Billy Bob's Auto Parts Stores. Billy Bob Barker founded Billy Bob's Discount Auto Parts Warehouse ("Company"), a prosperous retail auto parts chain based in East Tennessee in 1960, initially having one store. Throughout the 60's, 70's and 80's, the chain prospered, adding new stores as it grew to serve the mountainous areas of the Volunteer State that the big chains didn't care about, achieving a critical mass of 47 stores in 1997. The stock market was hot for new initial public offerings of common stock, so investment bankers persuaded Billy Bob to take the chain public, with the shares to be traded on the NASDAQ National Market System. Billy Bob would sell 90% of the Company in the public offering, while still retaining 10% of the public traded common stock. It was a win-win for everyone- the investment bankers, the public who bought the stock of a well managed auto parts chain, and Billy Bob, who was able to liquefy a portion of his hard earned wealth. A new management team was put in place (they were slicker than Billy Bob) to give the chain the look it needed to be a NASDAQ stock, and Billy Bob went into retirement.

Because of his hard work building the chain, however, Billy Bob did not get to enjoy his wealth for long, as his newfound leisure reduced the drive and ambition that had previously defined his life. Having no purpose, Billy Bob sat around each day watching the stock price and Dukes of Hazard re-runs on TV, causing his health to deteriorate. Finally, on November 2, 2001, Billy Bob died of a heart attack.

The Problem- Determining the Value of 120,000 Shares of Billy Bob's Company. Soon, the estate planning attorney had to start picking up the pieces. The estate attorney needed to know the value of the Company stock for the estate tax return. The attorney was concerned that since the estate held 120,000 shares, or 10% of the stock of Discount Auto Parts Warehouse (it had to drop Billy Bob from its name to appeal to public investors), a very thinly traded public stock, it would be difficult to sell the stock on the open market without driving down the price of the stock. The market for the stock was not large enough to absorb such a large block of stock at one time, leading to a suspicion that Billy Bob's stock might suffer from "blockage," and therefore be worth less than the price quoted for the stock in the papers. Therefore, it was necessary to engage a business valuation firm to determine the impact on the fair market value of the shares for the estate tax return.

Indications of a Thin Trading Market in the Company's Stock. The Company's shares are publicly traded on the NASDAQ Stock Market under the ticker symbol *VROOM*, and had a quoted price of $20.00 per share on the date of Billy Bob's death. Analysis of three years of prior stock market trading data on the Company indicates that its trading volume equaled or exceeded 8,000 shares per day only ten times over this entire three-year period and hit a high of 25,000 shares only one time during the three years. As is summarized in the following table, over the three years prior to the valuation date the average daily trading volume was 5,000 shares. Therefore, even though the Company's shares are publicly traded on a stock exchange, the trading volume is erratic and (as will be seen) lacks sufficient depth to readily absorb the Estate's 120,000 shares (note: a real valuation report would go into substantially greater detail to analyze and assess trading patterns).

Stock Share Volume Statistics
Discount Auto Parts Warehouse
Past Three Years

Average Daily Trading Volume	5,000
Minimum	0
Maximum	25,000

Estate's Shares Not Worth Public Trading Price. The Company's shares held by Billy Bob's estate are not accurately valued at the quoted publicly traded market price of $20.00 per share as of the valuation date. This is due to factors related to the large size of the block of stock held by the Estate relative to what the public trading market of the stock can absorb. The block held by the Estate constitutes approximately 24 days (120,000/5,000) worth of the total average daily trading volume of the Company's shares (over the last three years). In other words, if the Estate was the only seller in the market, it would take 24 days worth of average trading volume to get rid of the stock.

Furthermore, attempting to sell the block of shares at one time would very likely have a major depressing effect on the share price, as "dumping" 120,000 shares on the market would unbalance the historic supply-demand equilibrium. In fact, as will be discussed later, a market maker (the stock market specialist that matches buyers and sellers for this specific stock on the exchange) for the Company's stock indicates that the public market simply could not absorb these shares except over a longer period of time. A

seller attempting to convert these shares to cash in a very short period would realize less than the bid price because of the supply-demand imbalance. Conversely, a seller attempting to "dribble out" the shares over a reasonable time period would be subject to market risk in that the share price of the Company could drop over the period in which it takes for the shares to be sold.

Additionally, a little knowledge about trading volume statistics will show the situation is far worse than it appears. The stated trading volume of the Company's stock is close to double the actual trading volume occurring due to the way NASDAQ accounts for trades, counting volume for both the buyer and the seller. Therefore, if the effective actual volume is closer to half the reported total (note that shares held by the market maker overnight in inventory are also counted, so the real trading volume is not necessarily exactly half), this means that it would require approximately 48 days of the entire average "real" daily trading volume of 2,500 shares (approx. one half of 5,000 shares reported as the average) per day to trade the 120,000 shares, **with the market consuming no other trades from other sellers whatsoever**. Thus, the market's ability to absorb the 120,000 shares held by the Estate is significantly inhibited.

Other Elements Impacting the Market for the Stock. There are some other elements for consideration, however. A market maker of the stock was interviewed to determine how the Estate's volume might reasonably be sold into the public trading market. Additionally, the historic stock price volatility of the shares is a key determinant in estimating the cost of a put option. A put option effectively guarantees that the Estate will receive the current price per share over the time frame needed to dispose of the shares in the public market. These and other factors will be discussed in more detail later.

Valuation Methodology Overview. The issue now is how to determine the impact of blockage on the value of the 120,000 shares as held by the Estate on the valuation date (date of death), taking into account daily trading activity in the stock, market forces and other issues. Given the facts as outlined, the methodology might be based on three market approaches, as will be summarized in the following sections. The first method involves taking into account the time necessary to sell the shares into the available public trading market, and estimates the costs of purchasing put options to ensure the stated price of the shares on the valuation date ($20.00 per share) will be received over the required disposition period despite what happens to the stock price in the interim. The second method involves an estimation of the value of the shares obtainable through a private placement of the shares through an intermediary (rather than through sale on the NASDAQ) and the associated costs incurred. The third method involves a determination of the discount for lack of marketability (illiquidity) of the specific shares based on studies on this subject and their application to the unique circumstances of the shares held by the Estate.

The following sections explain each of these methods along with a highly simplified example of how they might be used to value the Estate's stock.

1. Price Pressure and Market Exposure Approach. The first approach assesses the ability of the existing public trading marketplace to absorb the shares given the actual size of the block to be sold (120,000 shares).

Two components to blockage are considered. The first component, termed *price pressure*, estimates the impact on share price of introducing a large block of stock into the market by analyzing share price variation and trading volume. This component assumes that the shares are sold in the marketplace over a short time period, such that the increased share volume has an impact on share price. The second component, *market exposure*, is the cost associated with bearing the risk of keeping an open position in the stock until all of the shares can be sold. The risk is that the share price will drop during the period it takes to dispose of the stock. This cost is estimated by calculating the cost of buying a put option on the block of stock over a period sufficient for all of the shares to be sold[1]. A put option gives the holder of the stock the ability to "put" the stock to the writer of the put option at a preset price (here $20.00 per share, the amount the Estate wants to ensure it will receive) for a specified period of time. This way, if the stock price declines, the Estate has the ability to put the stock to the put option writer for $20.00 per share.

There are two extremes considered in this analysis. The largest *price pressure* component is based upon the variation in price due to "dumping" the Estate's 120,000 shares on the market in one day. Since the average daily trading volume for the three-year period is only 5,000 shares, offering 120,000 additional shares would be equal to the total trading volume occurring on 24 average days. As discussed earlier, there were only ten days over the entire three-year period analyzed where daily trading volume equaled or exceeded 10,000 shares, and trading volume was never higher than 25,000 shares in a single day. Additionally,

[1] *The Handbook of Advanced Business Valuation*, Robert F. Reilly and Robert P. Schweihs, McGraw-Hill.

the reported trading volume is close to double the actual trading volume occurring due to the way NASDAQ accounts for trades, counting volume for both the buyer and the seller. Therefore, if the effective actual volume is close to half the reported total, this means that it would require approximately 48 days of trading volume at the average "real" daily amount of 2,500 shares per day to trade the 120,000 shares, with the market consuming no other trades from other sellers whatsoever.

The actual trading volumes and the ability of the market to absorb the shares were discussed in detail with the one market maker for the stock. He indicated that the market is limited, with some days having no trades at all and noted that the thin nature of the market keeps the market maker from keeping an inventory in the stock overnight to avoid price risk. Given the thinness of the public market, the market maker believes that it would not be possible to sell the stock overnight or in a reasonable time frame (several weeks or less) at almost any cost. Therefore, the price pressure of selling the stock quickly on the open market is essentially not relevant as the market cannot absorb it in a short time frame.

The *market exposure* component is based upon a "dribbling out" of the Estate's shares over a longer time period, i.e., over a long enough time that the additional trading volume would have no effect on the market's share price (absent other changes in the public share price due to the economy, company performance, etc.). Since the cost of put options needed to guarantee this price are partially based upon the option term, the cost of put options would be significantly higher than if the shares were sold quickly. This is due to the fact that the cost of a put option increases as the option period or term lengthens. If the shares could all be sold in one day (which they cannot in this instance), there would be an insignificant *market exposure* cost, and if the shares were sold over a longer period of time, there would be an insignificant *price pressure* cost. A rational investor would seek to minimize the sum of the *price pressure* and *market exposure* costs.

Since the market maker indicated that the market does not have enough depth to absorb a quick transaction, the only way to sell the shares on the public market would be over a longer period of time. The market maker indicates that it is his belief that the depth of the market could only absorb a maximum of 10,000 additional shares of trading volume per month. Thus, the existing public market would take about twelve months to absorb the 120,000 shares held by the Estate. Therefore, in this particular valuation, price pressure is not considered as an element in the valuation, with the only element present to be market pressure. However, in many blockage valuations both elements will be present and must be incorporated into the analysis.

Sale in the Public Market-Establishing a Reasonable Disposal Period. Estate tax regulations require that a "reasonable" period to dispose of the shares held in an estate be considered. A reasonable period is based upon the facts and circumstances of each case. As noted previously, the market lacks sufficient depth and liquidity to absorb the shares except over a longer period of time, which as noted, was based on 10,000 additional shares per month (per the market maker), or 12 months to absorb the additional volume of 120,000 shares held by the Estate.

During the period it would take for the Estate to sell its shares in the public market the Estate is subject to market exposure risk that the Company's share price will decrease due to any one of a number of factors. These factors could include a negative earnings announcement, loss of a key person, an increase in customer bad debts, a downturn in the economy or numerous other internal and external forces.

This risk can be offset or hedged by the purchase of a put option that provides the Estate the ability to sell its shares at a set price for a specified time into the future. Thus, by purchasing put options on the valuation date, the Estate would be able to guarantee that it would receive the trading price per share of the stock on the valuation date in the future periods required to liquidate its holdings, despite any fluctuations in share prices that might subsequently occur. However, to guarantee the receipt of the stock price of $20.00 per share (the price on the date of death), there is a cost associated with purchasing put options. This cost is quantified using the Black Scholes option pricing model. This model and the variables that impact the cost of an option are discussed in summary fashion in a following section. This discussion is followed by the actual use of the model to determine the cost of purchasing options to hedge the price of the stock in this instance, covering the time frame in which it would take the Estate to dispose of the shares in the public market.

In order to estimate the value of the Estate's holdings, the exercise price of the option is assumed to equal the average share price (average of high and low as required by Estate Tax regulations) at the date of death, or $20.00. A key issue in pricing the option is the length of the option. An option's value increases the longer the exercise period, as the 'guarantee' from the

option writer to buy the stock at the exercise price covers a longer period. Therefore, the longer the option period, the greater the cost to the Estate to protect itself against a possible decline in the value of the Company's stock over the entire disposition period.

Overview of Option Pricing Theory. A widely used tool for pricing the value of put and call options on a stock is the Black-Scholes options pricing model (whose creators were awarded the Nobel Prize in Economics).[2] This model has been shown in academic studies to reasonably predict the value of listed, shorter term put and call options of publicly traded stocks. A "put" option gives the holder the right to "put" the underlying shares to the counter-party at a predetermined price (the 'exercise price") at any time during the term of the option (up to its "expiration date") despite what changes have occurred in the underlying price of the traded stock. Thus, the holder of a put can insure against downside changes in the stock price through the ability to put those shares to the buyer at the predetermined price. The cost of using a put option is the "option premium" paid by the buyer. A call option is just the opposite of a put, giving the holder the right to "call" (buy) the stock during the option period at a predetermined price. Thus, if the price of the traded stock price rises, the holder can acquire the shares at the lower exercise price per share. A listed option is one that can be bought or sold on an exchange, similar to the underlying stock.

The Black-Scholes method is based on the fact that options derive their value from two sources - time value and intrinsic value. Intrinsic value is the profit to be realized if the holder of the option were to exercise the option today. In the case of a put, suppose the holder has the right to sell shares of the Company for $20.00 per share and the current traded price of shares is $15.00 per share. Thus, the holder could buy the stock for $15.00 and simultaneously sell the shares for $20.00, realizing a $5.00 per share profit. $5.00 per share is the intrinsic value of the option.

In addition, options also have time value. Time value arises because the put option gives the holder the right to sell the stock in the future at a fixed price. Since stocks fluctuate in value over time, this volatility creates the potential to realize additional profits in the future. Options traded on an exchange (listed options) are typically of short duration to expiration (typically one year or less) and are readily and reliably valued by the Black-Scholes method.

The factors shown in **Table 1** affect the price of an option.

Table 1
How Different Variables Affect the Value (Cost) of an Option

Variable	Impact on Value of Option
Volatility of the underlying stock	The greater the volatility of the underlying stock, the greater the cost of the option. In the case of a put, a more volatile stock means the writer of the put may have the shares put to them at a time when the price of the stock has dropped materially. A less volatile stock means the writer has less likelihood of having a large drop in the stock price, and hence less chance of having to bear a large loss.
Risk-free rate of interest	The greater the risk-free rate of interest, the greater the value of a call option as the holder can control the underlying stock without having to pay the full proceeds to buy it, instead investing the proceeds in a risk-free investment. In the case of a put the reverse is true.
Exercise Price	The greater the exercise price, the lower the value of a call option, as it decreases the chance that the option can be exercised at a profit. Similarly with a put, the greater the exercise price the greater the value of the option as there is greater chance for the holder to put the shares to the writer of the option at a profit. Also, the exercise price comes into play in determining if the option has intrinsic value.
Term to Expiration	The greater the time to expiration of the option, the greater the value of the option as there is a greater chance the option can be exercised at a profit, hence the more costly the put will be.
Dividend Rate of the Underlying Stock	A company with a policy of paying out high dividends will have less upside in the stock price in the case of a call option.

Scenario used in Option Pricing for the Estate's Shares. As noted earlier, the market maker has indicated that it would require 12 months of additional trading volume (10,000 shares per month) to be able to sell the Estate's 120,000 shares in the open market. Therefore, the Estate needs to estimate the cost of buying a put option that will be needed to ensure the Estate will receive $20.00 per share (regardless of what happens to the price of the Company stock) over the 12 month required disposition period.

Estimate of the Cost of Buying a Put Using the Option Pricing Model. Data on the daily trading activity and share price of the Company was obtained for the twelve months prior to the valuation date for the Estate. This includes the closing share price and the average daily trading volume. Next, the standard deviation of the continuously compounded rate of return was calculated. This article won't go into the mechanics of how this is computed, however, suffice it to say that this is a measure of the stock's volatility over the last twelve months. This information is used in the Black Scholes option pricing model to estimate the cost of purchasing a put option for the 12-month disposition

[2] Fisher Black, and Myron Scholes, "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy* 81 (May/June 1973).

period needed to sell the Estate's 120,000 shares. Due to space constraints, these calculations (which are very complex) are omitted.

The estimated cost of buying put options to ensure the $20.00 date of death stock price will be received during the one year needed to sell the 120,000 shares of stock is **$2.76 per share**, or **$331,200** in total. Said another way, the cost of this insurance is 13.8% of the quoted share price.

One "Slight" Problem. One factor not considered in the previous calculation of the cost of buying a put option is that the Black-Scholes pricing model applies to listed or traded options that have full and almost instant liquidity. For most widely traded stocks on national exchanges there are standardized put and call options available which one can buy and sell quickly and easily. However, as for most smaller public companies, there are no listed options trading on the market for the Company's stock. One cannot simply call up a broker to buy a standardized put option on Discount Auto Parts Warehouse stock as one could for an option on Microsoft stock or other stocks that have standardized options traded on exchanges. This is due to the Company's low trading volume.

An "Option Haircut" is Needed. Since there is no active market for the Company's options, it would be necessary to find an entity willing to write (or sell) a non-standard, non-traded put option to the Estate. Given the low trading volume of the Company's stock, whatever firm agreed to write the put option would demand greater compensation than the price reflected by the Black Scholes model. This is because the writer of the option cannot readily trade the option on an exchange to unwind the position as with standardized option contracts, which can be sold almost instantaneously on an exchange.

A common industry rule of thumb in pricing unlisted options is that a 50% "haircut" is required as an additional charge (over and above the cost estimated using Black Scholes) to compensate the option writer for writing an unlisted option. The option writer is bearing a substantially higher degree of risk with an unlisted option because the option cannot be offset or hedged by buying a call option (as no traded options market exists for thinly traded stock like the Company's shares). The option writer trying to unwind his position, could, however, attempt to sell the option at some discount, or could also buy the underlying stock in order to have a protective put. However, the trading volume in the stock is very thin, making it difficult to buy such a large block to achieve a covered position without driving up the cost of the stock purchased. The cost of buying the stock to cover the put option (or, alternatively, the purchase of a non-traded call option to hedge the put) would be borne by the option writer who would consider this additional cost when pricing the put option in the first place. The 50% haircut charged in the industry is not merely related to the lack of marketability of the option. This haircut also must compensate the writer for the very real and unlimited risk of writing an uncovered put option when the position cannot be easily closed out or hedged as with traded options. The risk is unlimited because the put writer must stand ready to have the Company shares put to him or her at any time during the one year option period and pay $20.00 per share for them, even if Company shares are now only worth $1.00 per share on the open market.

Arriving at a Final Value for Blockage Shares Using the Option Approach. Table 2 shows the adjustment to the cost of put options previously determined by the Black Scholes model to include the additional cost of illiquidity and related factors based on the 50% increase in the premium previously noted. The total final adjusted cost of buying put options to hedge the block of stock is then subtracted from the value of the block based on the normal daily trading prices at the valuation date ($20.00 per share) to arrive at the final value of the large block being valued. This calculation takes into account the illiquidity of the option as well as the time required to dispose of it.

Table 2
Adjusting the Cost of Buying Put Options for Non-Traded Status and Calculation of Final Adjusted Fair Market Value of Shares Adjusting for Blockage (Rounded)

Preliminary Cost of Put Options Covering 120,000 Shares		$331,200
Increased Cost Due to 50% "Haircut"	50%	$165,600
Equals: Adjusted Cost of Non-Traded Put Options for Blockage		$496,800
Market Value of Block at Normal Market Price, Valuation Date [1]		$2,400,000
Less: Cost of Put Options		($496,800)
Equals: Preliminary Fair Market Value of Block of 120,000 Shares		**$1,903,200**
Discount of Block Compared to Normal Share Trading Price		**-20.7%**

[1] Based on the average trading price per share on the valuation date of $20.00 per share, times the 120,000 shares held by the Estate.

BLOCKAGE DISCOUNTS (continued)

An additional potential cost to be borne by the seller over the one year disposition period is the opportunity cost (or time value of money) associated with waiting a year until all of the shares are converted into cash. If the shares could be sold in one day or over a short period, this opportunity cost would be insignificant. However, over a one year period there is a true opportunity cost as the Estate cannot convert the stock to cash and then immediately re-invest it to earn incremental profits. However, this opportunity cost is presumably offset by the receipt of any dividends during that year and the potential for capital appreciation while attempting to dispose of the shares. Therefore, no opportunity cost was used to reduce the final values of the shares.

Table 3
Fair Market Value of Shares
Based on a Private Placement of the Block of Shares
Held by the Estate

Shares Held by the Estate		120,000
Times: Private Placement Price per Share		$16.50
Equals: Est. Value of Shares Via Private Placement		$1,980,000
Less: Costs of Private Placement (Avg. of Range- $0.10/share)	$0.10	($12,000)
Equals: Preliminary Fair Market Value of Block of 120,000 Shares		**$1,968,000**
Value of Shares at Traded Price Per Share [1]	$20.00	$2,400,000
Total Discount Off of Traded Value Via Private Placement		-18.0%

[1] Average of high and low price (rounded) of $20.00 per share on the valuation date.

2. Market Approach- Private Placement of the Shares. As was previously shown, the smaller degree of public trading activity makes it difficult to dispose of the large block of shares held by the Estate except over a substantial length of time. An alternative to selling the shares into the public market over time is to attempt to arrange a private placement of the shares (i.e., a private sale of the shares) through an intermediary. The following section discusses and calculates the estimated potential value of the shares obtainable via a private placement and incorporates the costs of doing so.

Estimation of Value via Private Placement. The market maker of the Company's stock also routinely handles private placements of public securities. The market maker preliminary estimates that he could obtain about $16.50 per share for a block of 120,000 shares with a public trading price of $20.00 per share, assuming the shares had to be sold in a reasonable time frame (i.e., several weeks or less). This equates to a 17.5% discount. He indicates that the performance of the Company, the rural and slow growth nature of the mountainous Tennessee markets it serves, its lack of visibility compared to other alternative auto parts retailer stock investments, and the narrow trading of the stock would require a material discount in order to sell the block. He indicates that the typical cost of arranging a sale for the Company's shares, which is negotiated in advance, would run from $0.07 per share to $0.13 per share, depending on the difficulty required to place the shares and if it required one or multiple buyers to consummate.

Therefore, applying the estimated discount necessary to potentially sell the shares in a private placement and incorporating the costs of doing so, the fair market value of the block of shares held by the Estate based on a private placement approach is calculated in **Table 3**.

3. Market Approach- Use of Studies on Discounts for Lack of Marketability. As was previously shown, the smaller degree of public trading activity makes it difficult to dispose of the large block of shares held by the Estate except over a longer of time, creating a condition of illiquidity (or lack of full marketability). Another way of estimating the impact of this illiquidity is to incorporate the costs of this lack of full marketability via the use of studies pertaining to lack of marketability.

The following section summarizes major studies available concerning lack of marketability. This is then followed by an analysis of factors impacting the specific illiquidity of the Company shares being valued. Finally, the selection and application of the appropriate discount to estimate the value of the shares is examined.

Study Findings. Numerous studies have been made to estimate the lack of marketability associated with minority shares and have followed two broad approaches to do so (note: this summary is highly abbreviated due to space limitations in this article). These studies are summarized in **Table 4**.

a. Restricted Stock Approach - From the mid-1960's to the 1990's various studies were made comparing the value differences between freely traded common stock and restricted shares of the same company. The restricted shares (also called "letter stocks") generally have all of the same attributes as the freely traded shares, except that they are generally restricted from sale on the open market for a specified time (usually two years). Because the only difference between the two classes of shares is marketability, price differences between the two classes of shares are cited as being only as a result of differences in marketability. Studies in this category include the SEC Institutional Investor Study and the Moroney Study.

BLOCKAGE DISCOUNTS (continued)

The SEC Study examined restricted stock of 398 publicly traded companies during the 1966 to 1969 time frame and determined that the mean discount for trades of restricted stock was approximately 26%. The study also isolated non-reporting companies found a mean discount of approximately 33%. The Moroney Study, published in March 1993, took a different approach, choosing to focus on trades in the restricted stock of 146 publicly-traded companies as made by 10 registered investment companies, finding a mean discount of 35.6%. As will be discussed later, a significant difference between this and the typical privately held interest is that the holder of restricted stock has a guaranteed public market for his or her shares in anywhere from one day to 2 years at most, depending upon how long the restrictions have until they lapse. A holder of shares in a private company has no such guaranteed public market. A more recent study by Columbia Financial Advisors looked at restricted stock transactions in 1996 to early 1997 associated with the reduction in the SEC's holding period from two years to one year (meaning a shareholder had a greater chance of realizing liquidity for restricted public stock). The Columbia Study found a much smaller 13% median discount. Since the holders would have close to guaranteed liquidity in anywhere from one day to one year by public trading, it is reasonable that the Columbia Study discount would be smaller than for the earlier studies. It is important to note that the stock of a closely held company does not have this nearly guaranteed future liquidity.

b. Initial Public Offering Approach - Mr. John Emory, ASA, of Emory Valuation LLC, has conducted more recent and ongoing updates of marketability discounts. As opposed to examining restricted stock, Mr. Emory examines transaction values of company stock while it was private and not freely traded prior to the Initial Public Offering (IPO). Emory compares these values with prices paid for the shares based on the offering price of the IPO when the company's stock is taken public. Prospectuses of IPOs are required to divulge the terms of recent past transactions in the shares, enabling a comparison of prices before and after "marketability" was achieved via the IPO.

Pre-IPO transactions are limited to the five-month period preceding the IPO, implying that most buyers and sellers are aware of the impending IPO and the potential marketability of the stock. For example, if a shareholder disposes of company stock at $6.00 per share and the stock is subsequently brought public at $10.00 per share, Mr. Emory calculates a marketability discount of 40%. In nine separate studies conducted over 18-month periods since 1980, Mr. Emory examined 346 companies and found an average discount of 46% and a median discount of 45% between the pre-IPO trades and the actual IPO price.

Table 4
Results of Marketability Studies[1]

Study	Average Marketability Discount
Based on Restricted Shares in Publicly Traded Companies (Two Year Holding Rules):	
SEC Institutional Investor Study (All Companies Studied)	25.8%
SEC Institutional Investor Study (For Non-reporting OTC Companies-Generally Small)	32.6%
Hall/Polacek Study (FMV Opinions)[3]	23.0%
Stryker/Pittock Study[4]	45.0%
Gelman	33.0%
Trout	33.5%
Moroney	35.6%
Maher	35.4%
Standard Research Consultants	45.0%
Willamette Management Consultants (percentage is median)	31.2%
Based on Restricted Shares in Publicly Traded Companies (New One Year Holding Rules):	
Columbia Financial Advisors	13.0%[5]
Based on Shares in Private Companies That Are Subsequently Taken Public:	
Emory Valuation LLC Studies (IPO Approach)	46.0%[2]

[1] Sources: Summary of studies contained in the chapter entitled "Discounts & Premia," by Shannon Pratt, in the *Valuation of Closely-Held Companies & Inactively Traded Securities*, published by the Institute of Chartered Financial Analysts, data from *Business Valuation Review* and *Valuing a Business* by Dr. Shannon Pratt, FASA, Dow-Jones Irwin, and *Quantifying Marketability Discounts*, Z. Christopher Mercer, ASA, CFA.

[2] Average of the medians found in nine separate studies for the following periods covering the time frame of 1980 to 2000. Source: "The Value of Marketability as Illustrated In Initial Public Offerings of Common Stock," by Mr. John D. Emory, ASA, *Business Valuation Review*, September 2001.

[3] Hall, Lance S. and Polacek, Timothy C., "Strategies for Obtaining the Largest Valuation Discounts," *Estate Planning*, January-February 1994, pp. 38-44. This study considered over 100 restricted stock sales occurring from 1979 to 1992. It found the higher discounts for blocks of stock of less than $10 million, discounts were higher for blocks where the ownership interest was greater than 10%, and that discounts increased (to 30% to 40%) as the market capitalization of the corporation falls below $50 million, versus discounts in the 10% to 20% range for those worth over $100 million. No supporting data is available for the study.

[4] Pittock, William F., and Stryker, Charles H., "Revenue Ruling 77-287 Revisited," *SRC Quarterly Reports, 1983*, pp. 1-3. The study reviewed 28 private sales of restricted shares occurring from October 1978 to June 1982. It found a median discount of 45%, ranging from 7% to 91%. Underlying data was not provided. The study found that more profitable companies and those that have larger revenues generally have smaller discounts.

[5] Aschwald, Kathryn, Columbia Financial Advisors, "Restricted Stock Discounts Decline as Result of 1-Year Holding Period," *Shannon Pratt's Business Valuation Update* (May 2000). This relates to stock under new SEC rules that only require a one-year holding period. See the earlier comments on this impact.

Analysis of Interest Being Valued. The following factors were considered (including those cited in *Estate of Bernard Mandelbaum*), among others, in determining the appropriate marketability discount in addition to the marketability studies discussed above (note: due to space limitations, the following discussion is highly simplified compared to a real valuation):

1. Private vs. public sales of the stock - This factor was considered by analyzing the sales of similar interests in like companies via the marketability studies discussed earlier. There is a public trading market for the shares, although its history indicates it is insufficient to absorb the large block held by the Estate except over a longer period of time. This is a negative factor impacting marketability. On balance, this factor suggests an above average discount for lack of marketability is warranted.

2. Cost of a public offering- The shares of stock are already publicly traded, however, the market level of interest for the Company's shares is thin. The fact that a public market does exist for the shares is a positive, as it does provide some ability to convert shares into cash, albeit over a long time frame. Negatively, the fact that the "market" cannot absorb the shares except over a longer time frame makes the shares "restricted" (in reality, although not as with SEC restrictions) in terms of the ability to realize liquidity. As was shown earlier, the public market would require approximately one year to absorb the shares, similar to the one year or less holding period for restricted stock in the Columbia Financial Advisors study. Considering this factor this suggests that the discount for lack of marketability might be similar to that found in the Columbia Financial Advisors study.

3. Redemption policy- There is no history evidencing a willingness of the Company to redeem shares which would create an additional market for the stock. However, most companies don't have redemption policies either. Therefore, this factor suggests an average discount for lack of marketability is warranted.

4. Financial statement analysis – This report has analyzed the results of annual operations, the condition of the company's balance sheet, the ratios discussed earlier and other factors (in a normal valuation report this would be included, however is not done here due to size constraints). The Company's overall growth characteristics are rated as fair (given the slow growing nature of the largely rural market served), suggesting that finding a buyer of the shares would be more difficult, since buyers could choose alternative real auto parts retailer stock investments with better investment potential. In terms of growth, *HOT WHEELS* (an industry trade journal that follows the performance of auto parts retailers) gives the Company a B rating, versus an industry average of B+. In terms of profitability, the rating service gives the Company a B, the same as the industry average. In terms of financial health, *HOT WHEELS* gives the Company a B-, versus an industry average of C+. These and related factors suggest an average discount for lack of marketability.

5. Nature of the company, its history, position in the industry and its economic outlook – Many of the rural markets served by the Company have limited population growth potential. Additionally, in its few attractively growing markets (Knoxville and Chattanooga) the Company is facing stiff competition from much larger national auto parts chains that are better known, have broader product lines, and the ability to undercut the Company in price due to the ability of the national chains to get more favorable volume pricing from suppliers. As of the valuation date the economic outlook was uncertain, with a potentially slowing economy and a very real risk of a recession. In a recession, however, retail auto parts chains actually perform well, as industry data indicates that consumers hold on to existing cars longer rather than purchase new ones, a positive factor affecting marketability of the shares. On balance these factors suggest an average to modestly below average marketability discount.

6. Company's management - The Company's current management's ranks are small, but have shown the ability to successfully manage the Company, albeit over a reasonably short time frame (since Billy Bob's retirement). Negatively, significant key person risk is present which hurts the marketability of the shares.

These factors warrant an average to slightly above average marketability discount.

7. Amount of control in transferred shares - Control reflects a shareholder's ability to direct a corporation in its daily operations. Control represents an element of value that justifies a higher value for a controlling block of stock. The shares held by the Estate are a minority interest (10% of total shares) having no ability to unilaterally direct the affairs of the Company or to bring about or to block a sale of its assets, a negative factor. Positively, the block is one of the larger blocks held by any one shareholder. Thus, while the block is a minority interest, its size may give it some influence in corporate matters, although this is not assured. This warrants a below average marketability discount.

8. Restrictions on transferability of stock – The shares being valued are not subject to a buy-sell agreement, SEC or other legal restrictions on their sale, suggesting a below average lack of marketability discount. However, in reality, the thin public trading market serves as de facto "restriction" on the ability to convert the shares to cash, offsetting the benefits of no legal or other restrictions on their sale.

9. Holding period for stock - An investment is less marketable if an investor must hold it for an extended period of time in order to reap a sufficient profit. There are at present no known plans to sell the Company to realize its control value, so the potential for realizing a near or intermediate term return from a sale would be viewed as speculative. Additionally, the largely rural nature of the Company's customer base makes it relatively less attractive for a potential acquisition. Finally, industry data indicates that there is very little merger and acquisition activity in the retail auto parts segment, with large regional and national chains growing through new store openings rather than buying existing chains like the Company's. These factors warrant an average discount for lack of marketability.

10. *Dividends*- the Company has historically paid out a dividend, a positive factor given that a minority interest cannot otherwise force the payment of dividends, and had a dividend yield at the valuation date of approximately 1.8%. The payment of dividends is a positive, although there are many other retail auto parts stocks with greater growth potential that pay stronger dividends and for retailers whose shares are more readily traded. On balance, this factor warrants a slightly below average discount for lack of marketability.

On balance, the above and other factors suggest a discount that is moderately below the averages and medians of the restricted stock studies referenced earlier. The selected discount was **18%.** The most significant consideration was the findings from the Columbia Financial Advisors Study, which indicates that a holding period of approximately one year or less of restricted public stock averaged a 13% marketability discount. However, some of the other factors noted above tend to suggest higher discounts, therefore a 18% discount was used on balance.

Application of a Discount to Arrive at a Value of the Block of Shares. Application of the previously selected discount for lack of marketability results in a final estimate of fair market value of the Company's shares based on this method as shown in **Table 5**.

Table 5
Adjustment to Freely Traded Value of Small Trades for a Discount for Lack of Marketability Considering Illiquidity of the Block Being Valued

Freely Traded Value/Share Before Marketability Discount [1]		$20.00
Less: Marketability Discount	-18%	($3.60)
Equals: Fair Market Value/Share		**$16.40**
Times: Number of Common Shares Held by the Estate		120,000
Equals: Fair Market Value of Shares Based on Illiquidity		**$1,968,000**

[1] Average of the high and the low stock price on the valuation date.

Conclusion. Despite the use of three totally different approaches, the value of Billy Bob's Discount Auto Parts Warehouse stock fell into a relatively narrow range, which is at a substantial discount to the traded price per share. This article has provided a vastly simplified example of how various methods can be used to determine the value of public stock suffering from blockage. An actual analysis and valuation report of the issue would be far more involved, running 60 pages or more, and would consider a variety of other issues that might impact the size, if any, of the blockage discount. However, don't let the complicated sound of options pricing models, options haircuts, and other buzzwords distract you from the ultimate point of this article. Do not mistakenly assume that because your client has a big chunk of traded stock in a public company that the stock is necessarily worth the quoted trading price per share as this is often not the reality. Whether the issue is an estate tax return or a divorce settlement, naively using

BLOCKAGE DISCOUNTS (continued)

the quoted price per share may substantially overstate the true fair market value of the stock. ♦

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