



VALUATION DEVELOPMENTS

NEW ISSUES IN TECHNOLOGY VALUATION

Misusing Fair Market Value

Minor changes to the definition of fair market value to account for market rationality and the feasibility of closing deals at certain values can alleviate many of the issues associated with inflated fair market value opinions.

About This Article

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info@pellegrinoandassociates.com.

Pellegrino & Associates, LLC
10333 North Meridian Street
Suite 150
Indianapolis, IN 46290

Voice: 317.566.8199

Fax: 317.569.7144

www.pellegrinoandassociates.com

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There is much confusion in the valuation profession today regarding the semantics of the term fair market value. This confusion perpetuates value misstatements that have plagued a variety of forums, from valuation of assets for divorce and litigation to family limited partnerships and tax issues. The ramifications are substantial, since an independent valuation is the best indicator of value for a given asset next to someone writing a check. The roots of the semantic confusion are the misapplication of value standards, primarily fair market value and investment value; inappropriate value standard assumptions inherent in Rev. Rul. 59-60¹ and other Rulings; and cross-use of data based on these differing value standards.

Various Value Standards

Before exploring the semantic confusion and the impacts thereof, it is important to understand the various value standards discussed in this article. They are:

- **Fair market value** represents a hypothetical transaction between a willing buyer and a willing seller, with knowledge of relevant information and equity to both parties.²
- **Fair value** represents “the amount at which an asset (or liability) could be bought (or incurred) or sold (or settled) in a current transaction between willing parties, that is, other than a forced or liquidation sale.”³
- **Investment value** with respect to business valuations “means the value of an asset or business to a specific or prospective owner. Accordingly, this type of value considers the owner's (or prospective owner's) knowledge, abilities, expectations of risks and earning potential, and other factors.”⁴
- **Intrinsic value** is the value that is justified by assets, earnings, dividends, definite prospects, and the factor of management.⁵

¹ 1959-1 CB 237.

² *Id.*

³ Fishman, Pratt, and Morrison, *Standards of Value: Theory and Applications* (John Wiley & Sons, 2007), p. 23.

⁴ *Id.*, p. 24.

⁵ *Id.*, p. 26.

Jay Fishman and his co-authors quote an important statement from Benjamin Graham and David Dodd's *Security Analysis* with respect to the definition of intrinsic value. It is quite germane to a fair market value opinion:

*In general, investment practitioners now concede the existence of an intrinsic value that differs from price. Otherwise, the merit of substantial expenditures by both Wall Street and investment management organizations for the development of value estimates on broad lists of common stocks would be highly questionable.*⁶

This statement, which predates Rev. Rul. 59-60, reinforces the following central thesis of this article: The fair market value of an asset is the negotiated intrinsic value of the asset, not the price of the asset in the market. To be more precise, the fair market value of an asset will always fall within the range of the seller's intrinsic value on the low end and the buyer's intrinsic value on the high end, of the value spectrum.

This article presents examples and arguments, both empirical and theoretical, as to why this should be the case.

Misapplying Value Standards

What the market establishes as a basis for a transaction is not necessarily the fair market value of a company. In many cases, it is either the fair value (e.g., going private) or the investment value of the company (e.g., a strategic sale of the company).

Key differences exist between investment and fair value standards and fair market value that an analyst cannot ignore. For example, there is a specific buyer or owner in mind for an investment value opinion. This is not the case for fair market value opinion, which is a hypothetical buyer. Next, there is the issue of a specific expectation of a buyer, or an owner's knowledge and capabilities. Fair market value assumes an average hypothetical buyer's knowledge and capabilities. Under the investment value standard, one may consider an owner's unique attributes, such as, investment horizon or tolerance level for risk. With fair market value, one must assume some average set of these conditions. Naturally, there are many other attributes that one may consider as unique under an investment or fair value standard that one must average for a fair market value standard.

For example, motivations for a buy or sell are different. Timing requirements are different. Investor knowledge may be different. This last point is remarkably important. Because both parties to a transaction generally operate under nondisclosure agreements, there is nonpublic information that the deal's negotiators use to set the value of the transaction (more on this later in a discussion of the efficient market hypothesis). The buying public does not have access to such information, which is explicitly stated in the fair market value definition. All of these factors dictate the given price for a transaction. Inductively, these factors help provide a qualitative context as to whether a deal is rational under the fair market value standard. This article also presents several quantitative tests to measure whether a deal is rational or not.

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⁶ *Id.*, quoting from Graham and Dodd, *Security Analysis, 5th Ed.* (McGraw-Hill, 1988)

What about synergistic value in a transaction? Synergistic value is singularly unique, meaning that synergistic value considerations are generally part of an investment value opinion and not part of a fair market value opinion. There is little evidence to suggest that valuation analysts can possibly anticipate synergistic value for the average market with any measure of repeatability or credibility. The value of a target company to Eli Lilly may be much higher (or lower) than the same value to Pfizer, particularly if a company offers complementary products or provides for blocking value. How does a valuation analyst possibly account for this in any form of objective measure between these two companies, let alone an entire industry and market under a fair market value standard? This is easier to do under the investment value standard, because at least the analyst knows all the parties and can account for the value impacts explicitly.

The professionals who manage much of the mergers and acquisitions (M&A) are called investment bankers, not fair market value bankers. Their titles belie the true predilections these professionals have for arranging deals: They advise or invest money to establish a superior return. In fact, the investment banking industry, whose transactions drive much of the data that the profession uses for fair market value opinions, betrays the sanity of, or rationale for, using market comparables from M&A deals to establish the fair market value for a company. Those deals represent the price (not value) of a set of companies valued under an investment value standard, not a fair market value standard.

Fair market value, as defined, does not necessarily reflect the actual price that one could realize from an actual sale of a company in the real market. Recall that price does not equal value. Rather, the value standard reflects the notional value of the company in an assumed market that considers the historic and prospective value of the asset in light of the business risk associated with the company. Notional value does not include possible synergistic benefits or economies of scale that might accrue to the potential purchaser but are not already captured in the value opinion. In the real market, the company could generate as many prices as there are buyers in the market, with each buyer having the ability to pay its own specific price based on its own specific set of circumstances.

For example, one may offer to buy the U.S. Capitol for \$1; another party may offer \$100 million; a third party may offer \$1 billion. Each offer is valid (there are in fact an infinite number of possible offers), and yet only one will result in a final transaction, if such a transaction is even feasible. In the end, the final price will be the result of a set of negotiations between buyers and sellers that valuation analysts cannot likely ascertain or forecast with any measure of repeatability. But, valuation analysts can test such value forecasts for reasonableness within the market, which is important in rendering a fair market value opinion.

Valuation professionals are frequently asked to opine as to the fair market value of a company, not the investment value (or price) of the company. Although this is an important distinction, the profession mixes the two constantly. It is an easy argument that valuation analysts generate investment values more often than not. For example, many in the business valuation community use published public and private company transactions for comparable valuations to arrive at a supposed fair

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market value. However, many of those transactions represent an investment or fair value standard, as opposed to a fair market value standard: They arrive at a price for the acquisition target by accounting for synergies, necessity of a deal, and so on. Thus, the resulting value represents an investment value, not a fair market value, because all of the inputs to the value opinion represent an investment value standard.

With an investment value standard, the motivations are different for the transaction, and they do not serve as relevant comparables. It is hardly appropriate to value a going-concern business at the center of a divorce controversy using a transaction for a successful exit to a strategic buyer. The business involved in the divorce may never get to such a transaction. Just the fact of the divorce controversy may increase the probability that the business will fail, thus generating a lower value.

Several obvious problems arise with mixing the two value standards. First, it is improper, and business valuation analysts commit professional error, to use a company valued at investment value as a proxy for fair market value of another company. The value standards are different. It is irrational as using forced liquidation value of a similar company to establish fair market value for a healthy one. Second, it creates a self-feeding error propagation whose cumulative effects create speculative market bubbles. These in turn generate self-fulfilling prophecies of value, and subsequent value distortions. When these bubbles pop, analysts retreat to intrinsic values analysis, as seen by one set of authors: "Although scenario-based DCF may sound suspiciously retro, it works where other methods fail, since the elements of economics and finance apply even in uncharted territory."⁷

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Rev. Rul. 59-60 Issues

Recall that the definition of fair market value is as follows: "Fair market value represents a hypothetical transaction between a willing buyer and a willing seller, with knowledge of relevant information and equity to both parties."

While this seems simple to understand, several semantic and theoretical issues surround this standard. Rev. Rul. 59-60 explains: As a generalization, the prices of stocks which are traded in volume in a free and active market by informed persons best reflect the consensus of the investing public as to what the future holds for the corporations and industries represented. When a stock is closely held, is traded infrequently, or is traded in an erratic market, some other measure of value must be used. In many instances, the next best measure may be found in the prices at which the stocks of companies engaged in the same or a similar line of business are selling in a free and open market.⁸

The following are important basic assumptions inherent in Rev. Rul. 59-60:

- Price equals value.
- Informed people are buying a stock, and each person can make appropriate technical and qualitative analysis of the future returns for the

⁷ Koller, Goedhart, and Wessels, *Valuation: Measuring and Managing the Value of Companies* (Wiley, 2005), p. 655.

⁸ Note 1, *supra*, p. 2.

company.

- Sophisticated traders are representative of the entire market.
- Trading volume is synonymous with market acceptance.
- There is only sophisticated trading occurring.
- Comparable companies will serve as an appropriate market proxy.
- There is equity to both parties.

Empirically, these basic assumptions do not stand up well. First, price does not equal value. While there are many cases to demonstrate this for a variety of tangible and intangible assets, the focus of this analysis is publicly traded companies. That is the guidance Rev. Rul. 59-60 provides for establishing a fair market value.

Consider the case of Google. Its stock had a price of \$515.25 per share and a total market value of \$160 billion as of 8/31/07, and rose to as high as \$747.24 per share and a total market value of \$233 billion as of 11/7/07, only to fall three days later to \$663.97 per share with a total market value of \$207 billion. This is just one example—the general markets experience remarkably similar bouts of volatility.

Market pricing for Google suggests that within the span of 60 days, the market perceived an approximate perpetual extra \$8 billion in annual benefit,⁹ only to backtrack to a perpetual additional annual benefit of \$5.3 billion.¹⁰

How can a company at any level of maturity, let alone one having \$14 billion in annual revenues such as Google, possibly create and destroy value with such volatility within such a short period? What rational basis did the market have to impair Google's value by \$2.7 billion in additional annual benefit (about \$26 billion in market value) the second week of November 2007, without a material adverse announcement from Google, unless Google's current market value was unsustainable on an economic basis in the first place? Further, how is the valuation community supposed to use data such as this to make any type of meaningful comparative analysis, if the values are unsustainable on an economic basis (not verifiable with an intrinsic value analysis) in the first place? The reasonable conclusion is that the assumption that the price of a stock represents its value may not be sound, given such volatility.

Second, the ruling makes the extraordinary generalization that the market is informed with sophisticated investors. Implicit in this is the assumption that, because sophisticated investors are superior to the average investor, they should have exceptional returns as a group (otherwise, people would buy only indexed mutual funds). Empirically, this is not the case. For example, in 2000, FirstQuadrant published a study indicating that, at best, about 84% of sophisticated investors in the market could not beat the S&P 500 after considering

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⁹ \$73 billion change in market value (from 8/31/07 to 11/7/07) × 11.308% cost of capital (calculated using Google's beta of 0.98 [per Yahoo finance at finance.yahoo.com], an equity risk premium of 7.10%, and a risk free rate of 4.35%).

¹⁰ Using a \$47 billion change in market value from 8/31/07 to 11/7/07 × an 11.308% cost of capital.

taxes and fees.¹¹ Many who did are likely fooled by randomness and are just as likely to be up or down in a particular year, as there is variance depending on the time horizon for the analysis (e.g., only 5% of investors beat the S&P 500 for a 15-year time horizon).

There are hundreds of examples of spectacular sophisticated investor failures, but the subprime mortgage blowout is a great recent example. Sophisticated investors, after botching their mortgage valuations, sought (more like begged) for the Fed to bail them out with monetary policy changes. It is quite difficult to rely on these investors for guidance as to what constitutes market value, as these sophisticated investors did not get it right for themselves. However, intrinsic value shoppers, such as Warren Buffet, do quite well.

Further, there is much evidence to suggest that the buying public's access to relevant information is insufficient to constitute a meaningful analysis for valuing businesses using market comparables. For example, there are well documented cases of insider trading, manipulation by market specialists (particularly in gray market stocks), market timing, and special allocations for IPOs, not to mention just the plain stupidity of the buying public. All affect the reasons people buy or sell such securities, at prices that drive the multiples that the profession uses for value opinions.

Rev. Rul. 59-60, particularly section 3.03, also oversimplifies buyer motivations. This oversimplification increases potential for introducing error into the valuation process. The motivations for stock investing in 1959 and for stock investing today differ materially. For example, at the time of the Ruling, there were fewer, if any, automated investing systems and derivative instruments, and the people that had the means and ability to invest then were different from those today.

Third, Rev. Rul. 59-60 makes another generalization that sophisticated and well-informed investors are representative of the entire market. This is a faulty premise and reflects sampling bias. On many days, greater than 50% of all trading activity happens on the orders of unskilled automated trading systems (more on this shortly). Therefore, the focus on trading activity may bear no resemblance at all to the value of the company. There are many unsophisticated investors in the market as well who make daily trades using a variety of methods that may have no basis in any meaningful analysis. The extrapolation of the analytical capabilities of one investor segment is thus not appropriate. It would be like valuing a company based on the secondary market for its products, even though the company receives no direct financial benefits from product sales in secondary markets.

Fourth, Rev. Rul. 59-60 equates market volume with market acceptance. In fact, current curriculum teaches that when stocks have a high trading volume, many sophisticated investors are tracking the stock. This does not stand up well to scrutiny, either. It is well documented that sophisticated investors and brokers have a vested interest in generating additional market volume and volatility, as they make more money in doing so. There are also many well-documented cases of pumping and dumping stocks, in which unscrupulous investors short or long stocks

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¹¹ Arnott, Berkin, and Ye, Investment Management Reflections (FirstQuadrant, L.P., 2000), p. 247.

and publish misinformation in the market to generate trading activity favorable to their positions. The result: Valuation professionals are fooled by increased trading volumes initiated by parties wanting to make others think that more people are interested in the stock than actually are.

In addition, automated systems account for a substantial amount of the daily trading volume for a given company's stock. In fact, many automated trading systems account for the higher trading volumes,¹² and due to technology and other factors, there is less qualitative analysis of traded shares occurring today than there was in 1959. With automated trading systems, computers run sophisticated software that typically operates on a rules-based engine to identify and capitalize on market inefficiencies inherent in the system. An important attribute of these systems, run by quantitative analysts, or quants, is that the intrinsic value, the fair value, the investment value, or the fair market value of the subject asset is of no interest at all. Rather, if a given pattern of behavior emerges (e.g., two normally correlated stocks now diverge by some threshold), the programmed trading software will act accordingly, perhaps simultaneously shorting one stock and longing another. When the positions close out, the quant ideally makes money on both trades.

The valuation community should be quite concerned about the effects of automated trading volume on a particular stock.

The sophisticated investor is noticeably lacking from this quantitative process. Even the ignorant trader is missing. In fact, quants may have absolutely no interest in the fundamentals or hype of the underlying stocks they trade. Nor should they—the entire value proposition stems from exploiting patterns of activity to maximize return, without going through the pains to perform a comprehensive due diligence process. The valuation community should be quite concerned about the effects of automated trading volume on a particular stock; however, the professional literature has not shown evidence of such concern to date.

Fifth, Rev. Rul. 59-60 makes no provisions for unsophisticated investors, and yet they are in every facet of the market. Ignoring them creates a sampling bias.

Sixth, Rev. Rul. 59-60 makes the broad assumption that companies are actually comparable. This is highly unlikely, for many reasons. What if no comparable companies exist (more on this later)? The analyst must then use more general comparable companies, which is inconsistent and not appropriate. That is, if it is not appropriate to use general industry companies when better comparables exist, because of a chance of less precision and relevancy, then why is it permissible to use such companies as a market proxy when better comparables do not exist? The issues of less precision and less relevance did not go away.

Lastly, there is an assumption of equity to both parties. Again, the rationale is that a sophisticated buyer would buy only if there were equity, and the sophisticated seller would sell only if there were equity. However, there are many transactions in which the buyer is unaware of certain conditions until after the close. For example, in 2005, Boston Scientific did not know the extent of problems associated with Guidant's medical products until after its acquisition of Guidant closed.

¹² For example, programmed trading systems accounted for 27.66% of all trading activity on the New York Stock Exchange between 12/29/03 and 6/26/06 (www.nyse.com).

Efficient Market Hypothesis

The efficient market hypothesis (EMH) is an investment theory that reflects the diffusion of information and the integration of such information in the value of assets. The EMH provides an important context for understanding the definition of fair market value, particularly with respect to available information and the reflection of such information in value. The EMH has strong proponents and opponents.

The EMH asserts that markets are efficient and rational in processing information and that the market reflects such efficiencies in the value of a given asset. Empirically, this is an easy concept to test, whether it is for a commercial building or a share of stock in a company. If a commercial property is found to have toxic waste, the market will adjust the value of that property to account for the liabilities associated with the cleanup, future lawsuits, and other factors. If a public company misses, or exceeds, earnings targets, then the market reflects such information in the company's share price. As all information is reflected in the price of the asset, there is a fundamental belief in the EMH that the values are unbiased, and hence objective. Of course, the magnitude of a value change is of significant importance, as it drives the ultimate price and market value of the company.

There are varying degrees of market efficiency, which reflects the dissemination of information by the public. The EMH classifies the varying degrees as follows:

- **Weak form efficient:** The historical prices of securities represent all information with respect to value, and no one can earn excess returns in the market (i.e., “beat the market”).
- **Semi-strong form efficient:** The market reflects all information with respect to value within a timely fashion (near instantly), and no one can earn excess returns in the market.
- **Strong form efficient:** The market reflects all information both public and private with respect to value, and no one can earn excess returns in the market.

While there has been much empirical analysis both for and against the EMH, the concept is implied in the fair market value standard set forth in Rev. Rul. 59-60: “As a generalization, the prices of stocks which are traded in volume in a free and active market by informed persons best reflect the consensus of the investing public as to what the future holds for the corporations and industries represented.”

One may argue that Rev. Rul. 59-60 implies that the market is strong-form efficient, as valuation analysts must render a value conclusion with respect to a hypothetical buyer and a hypothetical seller, both having access to relevant information, with equity to both. Such a scenario exists only in a strong-form efficient market. Deviations from the strong-form efficient market would not reflect relevant information or create equity, thus violating the fair market value standard of Rev. Rul. 59-60.

Because of the implications of Rev. Rul. 59-60 and the reliance on strong-form efficiency of the EMH, a natural conclusion is that rational buyers and sellers would close a transaction only when there is equity to both and access to all relevant information. Merely looking at share prices as a value proxy for other companies

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does not provide such relevant information (particularly to the buyer), and so it is practically impossible to make a determination as to whether equity exists. This analysis naturally gets more complicated if there is a stock swap as opposed to a cash purchase for the company, as selling shareholders assume the risk of the buyer, of which they may have little working knowledge.

Implicit in the requirement of buyer and seller equity is that both parties are satisfied with the outcome at the closing of a transaction, considering the relevant economic environment (i.e., the deal meets or exceeds expected returns). However, how does one even begin to prove equity without performing the due diligence associated with determining the intrinsic value of the asset in the first place? The buyer cannot prove buyer's equity until performing a returns-based analysis, which one does by calculating the intrinsic value of the asset to the buyer. The seller cannot prove seller's equity until performing a returns-based analysis, which one does calculating the intrinsic value of the asset to the seller. Exhibit 1 shows a continuum that demonstrates equity allocation under the fair market value standard.

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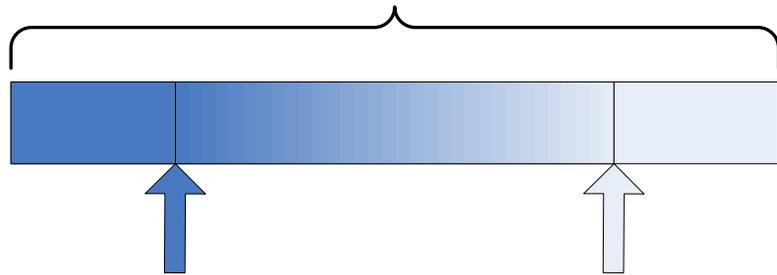


Exhibit 1. Fair Market Continuum

Thus, if both the buyer and seller perform an intrinsic value analysis to test equity, the natural result would be something within the range of the seller's intrinsic value, which sets the minimum or "floor" value for the transaction, and the buyer's intrinsic value, which sets the maximum or "ceiling" value for the transaction. Any value within that range will produce equity for both parties. Any value outside of this range will not create equity, and fails the definition of fair market value. Since this becomes an intrinsic value determination, does this not indicate that the fair market value is thus the within the range of the intrinsic value?

Comps are for Car Guys

If the premise for fundamental reliance on market comparables is not sound, when is the market right? Further, how should market information be reflected in a value opinion? This gets to a fundamental issue with the misapplication of the fair market value standard: knowing when to use market comparables to establish a fair market value, and when not to.

Fair market value, particularly when using market-based approaches, works extremely well for standardized or commodity assets, such as agricultural products, cars, residential real estate, and even a labor force. It is simple to measure the

Much Equity to Buyer, No Equity to Seller

effectiveness of these methods, as there are active markets for these commodities and generally good information availability (e.g., corn of a particular standard is the same no matter who grows it or where they grow it). If one owns a 2005 Nissan Maxima with 45,000 miles and wishes to sell it, one has many different means to establish the value of that car. These include relatively simple means, such as the car owner querying the market value of the car online at a website like Edmunds or Kelly Blue Book; or complex and labor intense methods, such as calling every person in the country to ask them what they would pay for the car, and then using the statistical median response from the population to arrive at a value proposition.

However, these market approaches fall apart when attempting to apply them to businesses, each of which is a distinctly different organic creature. It is even more difficult to apply such approaches to singularly unique items such as intellectual properties, which are unique and novel by definition (i.e., they have no direct market comparable). Why do these approaches fall apart? No matter how one slices it, comparable circumstances do not exist between each company under comparison. Each business is different, with many unique attributes. This makes it difficult to compare one business to another with any degree of reliability. For example, the following are just some of the factors that dictate why a company sold for a given price:

- Is there a strong management team?
- Is the company culture attractive?
- Does the company have any strong intellectual property?
- Does the company have a strong product pipeline?
- How well does the company translate resources into free cash flow?
- What is the brand reverence for the target asset versus the comparable asset?
- Where is the company located?

Some may argue that such details are unimportant and that basic metrics, such as return on assets (ROA) or return on invested capital (ROIC), are more appropriate in comparing firms. However, it is impossible to use such data consistently. For example, ROA is a meaningless metric for businesses that are not capital-intensive.

Even if one company is better at generating free cash flow from a given level of assets, how does the valuation analyst possibly account for difference in any objective measure? Valuation analysts would argue that their “expertise” and “judgment” allow them to make a credible value determination. For example, if one company generates free cash flow more effectively with a higher return on assets, perhaps a valuation analyst would account for this benefit with a higher valuation multiple, perhaps from 6 times cash flow to 7 times cash flow. However, a rational buyer would pay the higher multiple only if the intrinsic value commanded such. Objectively proving this is difficult without demonstrating the intrinsic value benefits to the buyer. If one does demonstrate such benefits, the process would become an intrinsic value determination.

Consider as an example an orthopedic company that manufactures an implantable knee. The company is within the standard industry classification (SIC) code 3842 (Orthopedic, Prosthetic, and Surgical Appliances and Supplies). A search of

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comparable transactions using Pratt's Stats yields six transactions between 1/1/04 and 12/31/06. Factoring out transactions that are not knee-, or even implant-, focused, there are two transactions available, but they are not relevant. Broadening the transaction set to all transactions in the database yields a maximum of 20 comparables; however, most of them did not apply to the knee or implants, or were too old to be relevant in today's market.

A lack of comparables is common across many industries, not just orthopedics. How can an analyst possibly rely on the availability of so few comparables to generate a value with any credibility? The bottom line is that it is not possible to generate a credible result consistently from this practice, as one starts comparing apples to oranges.

Further, using market entity comparables assumes many facts, including that market conditions remain constant: profits grow at a constant rate; the useful economic lives of the companies are the same; companies have the same operating and capital characteristics; earnings are not manipulated; and synergistic value is identical at the time of the acquisition and the exit event. These simplifying assumptions introduce a large amount of uncertainty in the final value.

Next, valuation analysts pretend to consider such factors by making adjustments for working capital, expenses, and others items on the financial statements. Normalizing working capital is an academic exercise; it is easy to do, somewhat quantitative, and thus objective. Working capital, while important, generally presents a *de minimis* value impact in the presence of a capable management team, a strong product, or some monopolistic attribute (e.g., a patent): These are more qualitative. Empirically, evidence suggests that if a company has the latter attributes, the market will provide the capital. Industry literature, however, bears little comprehensive discussion of differences between relative management teams, product performance, and other factors. For example, what is the impact on value of a cohesive management team, or CEO personality, with respect to a comparable company?

Lastly, the problems inherent with entity market comparables provide insight into why commercial real estate appraisers do not generally use the market approach for commercial real estate, such as office buildings. Commercial real estate appraisers typically value property based on its income-producing ability (i.e., its intrinsic value), not on a market multiple or comparable. They do this because there is not enough information to generate a credible value opinion: The transactions are too few, unique, and too geographically dispersed, just like businesses.

Using a business entity market comparable is akin to valuing the Sear's Tower in Chicago today based on the selling price of \$804 million in 1997 for Rockefeller Center in New York City (or even the 1997 value of the Sears Tower for that matter). It does not pass muster to do so. The leasing markets are different. The timing is different. Further, the intangible benefits of being in the Sears Tower may have diminished after the World Trade Center terrorist attacks exposed the vulnerability of that building as a potential terrorist's target. Naturally there are a host of other factors that demonstrate why such an approach fails as applied to commercial property. Then why does the valuation community believe such

Normalizing working capital is an academic exercise; it is easy to do, somewhat quantitative, and thus objective...while important, generally presents a de minimus value impact.

standards will work with businesses, which are arguably even more distinctive than commercial real estate?

Good Uses of Market Data

There is a variety of data that analysts typically use to arrive at a fair market value for an asset. Commonly used data includes interest rates on debt and available cash, discount rates for costs of capital, and costs for professional services. Valuation analysts use these market-derived data in generating a fair market value opinion. The reasoning is sensible and logical. If the current market pays $x\%$ for a given level of capital, an analyst can make the reasonable inference that the capital needs for a business under valuation would be similar. Examples of common factors that valuation analysts must consider in arriving at a credible, repeatable, and testable fair market value opinion are:

- Communications costs.
- Rental costs for a building.
- Cleaning costs for a building.
- Legal services in a given market.
- Capital costs for a given economic market.
- Salaries for employees in a given labor market.

Although there are many others, the common attribute among all of these factors is that there are plenty of options for a company to consider. If one law firm charges too much and generates no new client work, that law firm will lower its prices to meet the market, provide a greater value, or go out of business. The same holds true for many other value attributes.

Missing Market Data

Problems surface using market data as a value proxy when analysts move from commodity items that trade frequently on a free, open, active market as a value proxy to items that do not. Factors that analysts routinely use as a value proxy include revenue, earnings, or cash flow multiples. Problems arise for several reasons and relate to the same fundamental issue: Too much market data is missing, relating both to transactions that close, and those that do not.

Transactions are stored in databases or online websites that analysts can search. They are biased because they include only those transactions that actually closed successfully. For example, Pratt's Stats does not list the thousands of deals that do not close per year, or the companies that go out of business because the owners cannot sell them. Thus, there is a survivorship bias inherent in all of the transaction databases.

What is survivorship bias? It is a sampling bias that occurs when valuation analysts use only successful transactions to value a company. Valuation analysts provide little consideration for the survivorship bias inherent in the fair market value standard as they apply it currently. This robs the valuation analyst of crucial market data and forces the valuation analyst to the conclusion that all deals close successfully and transaction databases capture them accordingly. Empirically, this is a fallacious simplifying assumption, because many businesses fail ever to reach a transaction.

Problems surface using market data when analysts move from commodity items that trade frequently on a free, open, active market as a value proxy to items that do not.

No database exists that valuation analysts can search to determine how many companies never closed on a transaction because an asking price was too high. Also, no database exists that valuation analysts can search to determine how many companies went out of business because there was no buyer. Without this data, the valuation analyst is not capturing the full opinion of the market for a fair market value opinion.

Finally, historical market transactions represent just that: history. All asset valuations deserve the same general disclaimer as stock price reporting: Past performance is not indicative of future performance. This is because history does not equal market value. However, valuation professionals rely on transaction databases that have data that is years old and may have no relevance to current market conditions.

Here are some of the important factors missing from transaction databases (especially private transaction databases):

Most transactions never generate the value they are supposed to—and these are created by sophisticated investors!

- Why did the sale occur?
- When did the sale occur?
- How many potential buyers were made aware of the sale?¹³
- Was it a forced transaction?
- Was it a hostile transaction?
- Was there a bidding war? If so, how many bidders?
- What was the range of bids?
- How many bidders dropped out?
- How long did the sale take to close?
- What was the purported value standard?
- What was the effect of the sale later (i.e., was it accretive or destructive to market value)?

The last point deserves extra attention. There is a common post-sale effect known as the “winner's curse.” Most transactions never generate the value they are supposed to—and these deals are created by sophisticated investors! However, there is little in the literature to adjust down the value of companies in transaction multiples because proposed multiples do not include post-merger value considerations, such as the goodwill impairments because the acquirer paid too much for the target company. For example, if it is known empirically that 50% of M&A deals miss initial financial performance targets by 25%, the value of a company should be adjusted down by 12.5%¹⁴ to account for the expected value of the eventual missed performance. The present author hypothesizes that this pattern is exponential in nature and is researching this currently for future publication.

There are plenty of examples of missed financial expectations, and they include such deals as KKR/RJR Nabisco, AOL/Time Warner, Sony/Columbia Pictures, Quaker Oats/Snapple, Boston Scientific/Guidant, EBay/Skype, and Daimler/Chrysler.

¹³ It is a much different situation if 100 potential acquirers considered buying a target as opposed to two.

¹⁴ 50% failure rate × 25% performance miss

Naturally, these represent only the public companies, where the failures are reported and apparent. However, there are likely many more failures in the private market that go unconsidered.

Survivorship Bias Impact on Market Valuations

There is little or no formal discussion of mortality analysis for business valuation, particularly in any coursework or prevalent texts in the industry. While mortality analysis is a fundamental part of intangible valuation, such as intellectual property valuation or contractual valuation, there is little in any of the literature relating to the failure rate of businesses, mergers, and acquisitions. However, mortality analysis is a highly important consideration for valuation analysts valuing any asset because value is generally related to future economic generating capability, which is time-bound.

Failure to consider mortality creates sampling error and a survivorship bias. This survivorship bias puts remarkable upward pressure on business valuations. Because business valuation analysts do not generally account for the probability of non-success exit events, they generate consistently optimistic values. Consider the following example.

A software company generates \$1 million in net income in 2004. A search using SIC codes 7371, 7372, 7373, 7375, 7376, 7377, 7378, and 7379 in Pratt's Stats yields 99 transactions with a median equity price to net income of 19.966. Thus, an analyst may value this business at \$19,966,000. However, Pratt's Stats represents only transactions that succeeded. What about transactions that never closed? What if some market-derived study indicates that 20% of all M&A activity in the industry is abandoned?¹⁵ The valuation analyst should then reduce the value of the business because on average, there is a 20% chance that the company would never close a deal at the price indicated in a database laden with only successful exit events. The expected value for the business in this scenario would thus be \$15,972,800.¹⁶

There are other considerations, too. What about an M&A transaction that ultimately closed, but subsequently failed, or never met expectations? This is entirely possible, if not probable. In fact, Todd Saxton and Marc Dollinger indicate a greater than 50% failure rate¹⁷ for M&A activity after the close across different industries in different countries.¹⁸

The degree of failure varies by industry and deal. For example, consider eBay's 2005 purchase of Skype for \$2.6 billion in the related and relevant market. eBay wrote down the value of that acquisition by \$1.4 billion in October 2007, indicating

Failure to consider mortality creates sampling error and a survivorship bias, which puts remarkable upward pressure on business valuations.

¹⁵ There is no general repository for such data by industry, although academics have studied this phenomenon in some media industries (e.g., Muehlfeld, Sahib, & Witteloostuijn, 2006) and have suggested that between 14% and 25% abandonment of all mergers and acquisitions in those industries.

¹⁶ $\$19,966,000 \times (1 - 20\%)$.

¹⁷ The definition of failure varies depending on the source, but nominally, failure would indicate that a buyer fails to meet the financial targets of the transaction by some material margin of error.

¹⁸ Saxton and Dollinger, "Target Reputation and Appropriability: Picking and Deploying Resources in Acquisitions," 30 J. of Management 123 (2004).

an overpayment of 53.84%. Thus, accounting for the probability of post-M&A failure (if it were a similar type of company, and there existed enough relevant data), the expected value of the company in the related and relevant market at \$15,972,800 is now worth \$7,372,061. This same company, using market derived data, is thus worth 36.9% of the initial value indication.

Does it appear inappropriate to include such discounts for a fair market value opinion, on the ground that they generate a value that is “too low”? First, recall that valuation analysts should have no opinion on the value itself—only that the valuation analyst follows value development and reporting processes consistent with valuation standards. Next, valuation analysts have a responsibility to consider such value impacts, as they are theoretically sound and empirically testable. To ignore them would be analogous to a pharmaceutical company ignoring detrimental effects of an experimental compound for a new drug protocol, despite indications that 50 patients in 100 die from side effects.

Embedded Option

There is much activity in the market that drives the ultimate selling price for a company. Many transactions close at a price much higher than the intrinsic value for the company. Why is this? Are the buyers in these transactions fools? Not necessarily, but it is important to consider that they are investing based not on the intrinsic value of the business, but rather on price expectations and speculation (particularly private equity buyers, who may be more interested in the exit multiples for a business than in its intrinsic value). These price expectation and speculation factors are a derivative of the core business (much like stock options) with respect to fair market value (much like stock options) and are not related directly to the business' value under a fair market value standard.

As such a price is a derivative asset, independent of the core business, it should not be included in a fair market value opinion for the company directly. By analogy, companies are not valued based on the market value of open call and put options against the company, which are also derivative assets. Why is it permissible to value a company based on an embedded derivative? Valuation analysts would be committing professional error in doing so. The accounting profession has struggled for years with how to address the premium or discount, lumping the balance into goodwill because it had no other place to put it.

The *Daubert* Failure

Litigators commonly use business valuations as evidence in court. Theoretically, each of the valuation approaches that the profession uses should comply with legal principles established in the Supreme Court's *Daubert*¹⁹ decision regarding scientific evidence. These principles are that:

- The valuation method is testable.
- The valuation method has undergone publication and peer review.
- The valuation method has an acceptable rate of error and maintenance of

Many transactions close at a price much higher than the intrinsic value for the company.

²⁰ *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 US 579 , 125 L Ed 2d 469 (1993).

standards concerning its operation.

- The scientific community has accepted the valuation method.²⁰

It is easy to prove empirically three of the four key tenets: namely, that the market approach at an entity level is testable (transactions close at these values using these methods); that the valuation method has undergone publication and peer review (read any popular book on the topic); and perhaps that the valuation method is accepted by the scientific community (search court cases). However, the nature of the market approach at an entity level precludes it from ever meeting any sort of acceptable error rate under Daubert, particularly given valuation analyst and survivorship biases (e.g., consider Google volatility as an example of the large error inherent in a valuation for a similar company using a market multiple-based approach).

Next, suppose that a valuation analyst increases or decreases a market multiple based on some unique circumstances associated with the company. What possible basis does the valuation analyst have for doing so in an objective and credible fashion? Any adjustments that the analyst makes are likely going to be subjective, arbitrary, unproven, and not testable, and will likely vary greatly from analyst to analyst. Yet courts allow such activities all the time. Further, if greater than 50% of all mergers and acquisitions fail to meet expectations, does that error rate not raise a red flag to courts? One would think that an attorney worth his or her fee should be able to have a fair market value opinion given no weight if an analyst generated the opinion using the guideline publicly traded company method, which is not verified for information availability and equity using intrinsic value analysis. The method fails to pass all of the Daubert tests.

Testing for Fair Market Value

Analysts value many companies today using earnings, revenue, and cash flow multiples from transaction databases. How can one test whether the market multiples that the analyst is using are fair or not? Some relatively simple tests can be used to test the reasonableness of a fair market value opinion. If these tests indicate that a set of circumstances may be replicable in the current market environment, the value conclusion may likely be appropriate under the fair market value standard. If the value conclusion is not replicable in the current market environment, or worse yet, it is a completely perverted distortion of economic reality, the value conclusion under the fair market value standard is not likely appropriate.

Before considering these tests, it is important to understand the relationship between an earnings multiple and a discount or yield capitalization rate. Consider the capitalized future income method (also known as the Gordon growth model), a particular favorite of the valuation profession. The Gordon growth model indicates that the value of perpetuity, such as a going concern business, is as follows:

$$value = \frac{income_{t+1}}{costOfCapital - perpetualGrowthRate}$$

Some relatively simple tests can be used to test the reasonableness of a fair market value opinion.

The discount rate serves as an inverse of the earnings multiple. Thus, a cost of capital net of growth of 20% equates to a market multiple of 5, a cost of capital net of growth of 33.33% equates to a market multiple of 3, and so on.

There is an inverse relationship between the discount rate and the market multiple, as the chart in Exhibit 2 demonstrates. The chart indicates that, as the discount rate (or yield capitalization rate) increases, the market multiple decreases, as does value. This is good. Because the discount rate serves as a proxy for the risk of buying a target company, higher discount rates and risk should indicate lower values.

...the discount rate serves as a proxy for the risk of buying a target company, higher discount rates and risk should indicate lower values.

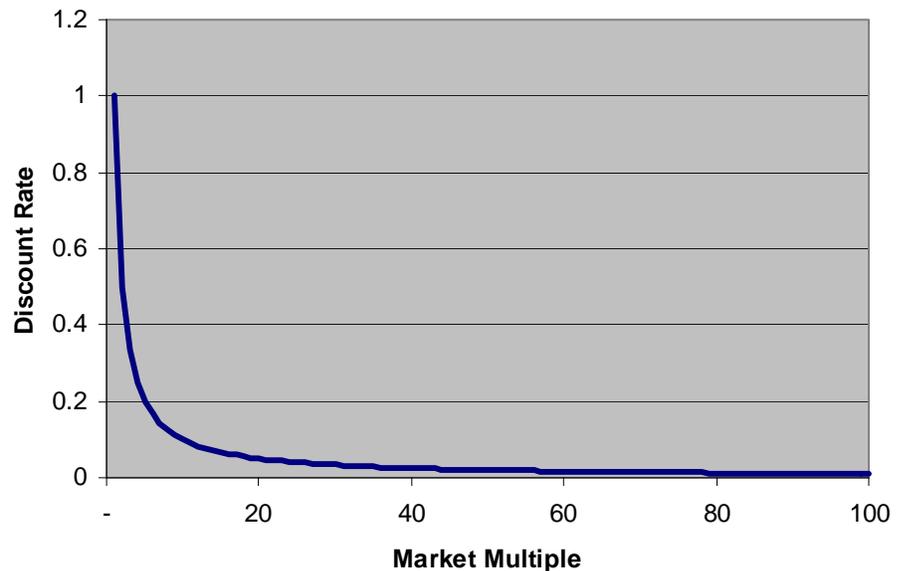


Exhibit 2. Discount Rate Relationship to Market Value

However, therein lies a paradox in the risk-reward paradigm as practiced in the market by sophisticated investors. It coincidentally serves as the first test. If higher discount rates signify higher risk, firms that have relatively small earnings multiples or revenue multiples, such as CPA firms and other “old line” industries, should be trading at higher earnings multiples than they do currently, as the relative risk of an established CPA firm or old line company is likely much lower than an internet startup. However, internet startups, which have some of the highest risk in the market, sell for the highest earnings multiples, indicating a lower overall discount rate (recall the inverse relationship to the earnings multiple and the discount rate). This is interesting as the market violates its own risk-reward continuum in doing so (with the thought being that the higher multiple is appropriate for the higher growth potential, though such value potential is also much more risky). Is this rational and reasonable? Why would a hypothetical buyer assume a disproportionate amount of risk without proper compensation?

The second test for reasonableness is to determine when the acquirer actually recoups the initial investment. If the time it takes to recoup the investment is reasonable and normal to the market, the value conclusion is probably reasonable and a fair market value. If not, it may be an unreasonable value, and it is not likely a fair market value. For example, the reasonableness of a company paying 100 times earnings for a web company can be tested. The acquirer is thus paying

\$100 for rights to current earnings of \$1. This 100 earnings multiple is equivalent to a cost of capital of 1%.²⁰ Under the Gordon growth model, the compound annual growth rate reduces the discount rate. To test if this is a reasonable value for the company, consider a company that is an acquisition target. The acquirer has a cost of capital of 20% and wants to pay 100 times earnings to acquire the target. To pay 100 times earnings for the company, it would have to have a cost of capital of 1%, which indicates a perpetual growth rate of 19%.²¹ If it were an early stage company with a higher cost of capital (e.g., 30 to 40% as is common in the venture community), the perpetual growth rate would be even higher.

| | | | |
|----|----------|------------|--------|
| 0 | 1.0 | 1.0 | \$1.00 |
| 1 | 1.4161 | 2.6061 | \$1.81 |
| 2 | 1.685159 | 4.291259 | \$2.07 |
| 3 | 2.005339 | 6.29659821 | \$2.53 |
| 4 | 2.386354 | 8.68295187 | \$2.91 |
| 5 | 2.839761 | 11.5227127 | \$3.22 |
| 6 | 3.379315 | 14.9020281 | \$3.47 |
| 7 | 4.021385 | 18.9234135 | \$3.67 |
| 8 | 4.785449 | 23.7088621 | \$3.83 |
| 9 | 5.694684 | 29.4035458 | \$3.96 |
| 10 | 6.776674 | 36.1802196 | \$4.06 |
| 11 | 8.064242 | 44.2444613 | \$4.14 |
| 12 | 9.596448 | 53.8409089 | \$4.19 |
| 13 | 11.41977 | 65.2606816 | \$4.24 |
| 14 | 13.58953 | 78.8502111 | \$4.26 |
| 15 | 16.17154 | 95.0217512 | \$4.28 |
| 16 | 19.24413 | 114.265884 | \$4.29 |
| 17 | 22.90052 | 137.166402 | \$4.29 |
| 18 | 27.25162 | 164.418018 | \$4.29 |

As the data in the table suggests, it will take a company 18 years to reach a point where the deal nominally makes sense (i.e., not accounting for the time value of money).

Exhibit 3. Target Company's Cumulative Growth and Compounded Earnings

The table in Exhibit 3 demonstrates the cumulative growth and the compounded earnings for the target company under the conditions presented. As the data in the table suggests, it will take a company 16 years to reach a point where the deal nominally makes sense (i.e., not accounting for the time value of money). What happens when one considers the purchaser's cost of capital, which compensates the acquirer for the time value of money? The graph in Exhibit 4 demonstrates the value to the acquirer over the course of 50 years.

²¹ Cost of capital - growth rate = 20% - 19% = 1%.

...the total value to the acquirer peaks at \$4.29, which occurs during years 18, 19, and 20 and goes down from there... in the best year for an exit event, the acquirer will lose \$95.71 of the \$100 paid for the company.

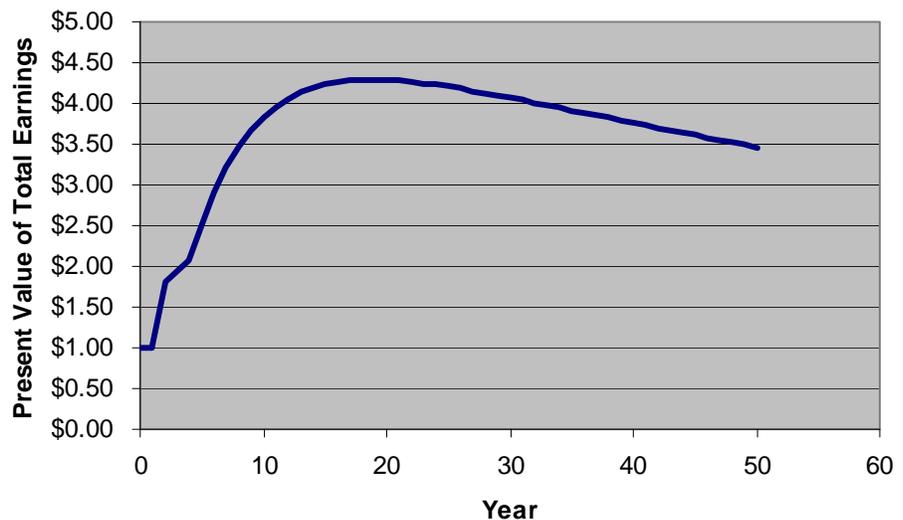


Exhibit 4. Target Company's Present Value of Cumulative Earnings

As the graph suggests, the total value to the acquirer peaks at \$4.29, which occurs during years 18, 19, and 20 and goes down from there. This means that, in the best year for an exit event, the acquirer will lose \$95.71 of the \$100 paid for the company. Is this a rational acquisition under the fair market value standard?

What happens if one goes out a little further in the analysis, perhaps to year 50? In this case, the total value to the acquirer is \$3.46. In the sample above, the acquirer never receives a return in excess of the opportunity cost of capital for the company. Is this a rational acquisition in the market under the fair market value standard? Where is the equity to the buyer in this case? Who but a fool would purchase a company knowing full well that he or she would lose 95.71% of the total value the date the transaction closes (not including transaction costs, which will only exacerbate the total loss)?

Who but a fool would purchase a company knowing full well that he or she would lose 95.71% of the total value the date the transaction closes?

For the third test, one looks to the assumptions inherent in the use of the earnings multiples—the growth rate. Companies pay higher multiples for companies that have greater growth potential. Recall that with the Gordon growth model, the growth rate is perpetual. As such, in the example, the target would grow at a compound annual growth rate of 19% for the rest of its existence. This defies logic, because empirically few companies can support such performance in the general market. One may argue that a company will be able to create a higher value because of synergies; however, remember that these synergies are unique and not representative of the entire market. Thus, they do not count in a fair market value opinion.

Further, companies that could not promise such sustainable growth must then ask the free market for financing at essentially 1% for an equity position. Does this sound reasonable for a fair market value opinion, particularly when there is much higher risk? Why would a rational acquirer choose this deal when they could invest in an FDIC-insured savings account and generate higher returns on a nominal basis, and vastly superior returns on a risk-adjusted basis?

Returning to Google, with a current price/earnings ratio of 51.94,²² the company would have to grow earnings at a compound annual rate of 95% to justify its current pricing at 51.94 for current earnings.²³ That means that Google would have to generate net income of \$219 billion per year in Year 7 to justify its current value on a fair market value basis to meet the equity requirements of the seller. Is this reasonable under a fair market value standard?

Perhaps one of the most telling demonstrations of the inherent fallacy in excessive market multiples is SonicWall. In 1999, SonicWall had a price to earnings ratio of 8,675 and a market valuation of \$1.2 billion on \$140,000 in earnings. SonicWall's discount rate (the equivalent to its cost of capital), when considering the discount rate being the inverse of the earnings multiple, was 0.011%.²⁴ That means that the public capital markets, fueled by some of the most sophisticated investors in the world, essentially gave an interest-free loan to a company that had profound risk relative to other alternative investments. Is this rational and reasonable under the fair market value standard?

The bottom line is that when using market comparables under a fair market value standard, one should keep them for valuing commodity assets such as cars and corn. For all else, one should perform an intrinsic value analysis.

The Fair Market Value Semantic Fix

When cross-referenced with the EMH, which assumes that the market behaves in a rational and orderly manner, the fair market value of a company should always be the intrinsic value of the company. In fact, by definition, it cannot be anything other than the intrinsic value of the company. The rationale is that a willing buyer would have no reason to spend any more than the intrinsic value of the asset to the buyer. It does not create equity for the buyer and it destroys value—this is hardly rational. A willing seller should not sell for any less than intrinsic value, as it does not create equity for the seller, which destroys value and is also irrational.

While transactions close all the time at values other than intrinsic value, such buyers are no longer rational under the efficient market hypothesis in the context of the value to a hypothetical buyer. The reason is that the hypothetical buyer is replaced with another type of buyer, with additional knowledge or motivations (e.g., synergies, fear, divorce, accounting fraud, or protracted litigation). By definition, the preconditions to fair market value are violated the instant this occurs. The value standard is no longer fair market value, nor is it appropriate to call the resulting opinion a fair market value opinion.

Fortunately, there is an easy fix to address many of the key issues presented by Rev. Rul. 59-60. Qualifying the buyer as a rational buyer and the seller as a rational seller should help tighten the definition of fair market value and remove much of the semantic confusion. Adding explicitly that such a deal is feasible and makes economic sense is also important. The following is perhaps a better definition for the fair market value standard:

The bottom line is that when using market comparables under a fair market value standard, one should keep them for valuing commodity assets such as cars and corn.

²² As of 11/11/07.

²³ Assuming an 11.308% cost of capital and an exit event in Year 7.

²⁴ $0.011\% = (1 / 8,675)$

Fair market value is a hypothetical transaction that is feasible within a given market environment between a willing and rational buyer and a willing and rational seller, with knowledge of relevant information and equity to both parties.

Adding the words “feasible” and “rational” to the standard definition provides an additional test that valuation analysts should make to validate that the result is reasonable. This judgment should tie the resulting opinion of fair market value to the intrinsic value of the asset, as no rational person would pay more than the negotiated intrinsic value for the asset. Further, the intrinsic value is tied automatically by adding the explicit language to account for the current market environment (thereby ignoring the implications of stale data from transaction databases).

Conclusion

Much confusion arises from semantic misunderstandings of the fair market value standard. First, valuation analysts, using market multiples of revenues, earnings, and cash flows, intermix fair market value and investment value standards constantly. Second, it is inappropriate to use market comparables in valuing companies that are unique, organic creatures; objective comparisons among various entities are hard or impossible to make. Rev. Rul. 59-60 brings no clarity to the issue. Instead it assumes several inappropriate preconditions that build a greater, yet unjustified, confidence in current methods. The EMH, when cross-referenced with Rev. Rul. 59-60, suggests that full knowledge of all relevant information under the fair market value standard may ultimately result in values that fall within the range of the intrinsic value to the buyer and the intrinsic value to the seller.

Current transaction databases, which capture only successful transactions, create a sampling bias that tends to inflate the expected value of a company, as these reference data sources do not include mortality data or post-transaction success considerations. There may also be embedded price expectations, derivative to a company's intrinsic value, that drives market valuations higher or lower. All of these factors may indicate that an entity valuation, established using market multiples, will provide attack points for examination under Daubert.

There are several tests that valuation analysts can perform to test the reasonableness of a given fair market value opinion. These include verification of the returns and risks of relative investments with the market multiples analysts use; an analytical analysis to ensure that buyers can make acquisitions that are accretive to value; and a test to ensure that the growth rate is consistent with market norms. Finally, minor changes to the standard definition of fair market value to account for market rationality and the feasibility of closing deals at certain values, can alleviate many of the semantic issues that result in inflated fair market value opinions.

Adding the words “feasible” and “rational” to the standard definition provides an additional test that valuation analysts should make to validate that the result is reasonable.
