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# Business Valuation Update

## Business Valuation Update™
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Vol. 27, No. 4, April 2021

# BUSINESS VALUATION UPDATE

TIMELY NEWS, ANALYSIS, AND RESOURCES FOR DEFENSIBLE VALUATIONS

## *Letter to the Editor:* Comments on Using Jensen's Alpha for Active and Passive Appreciation

*Editor's note: This is a Letter to the Editor from Ashok B. Abbott, Ph.D. (West Virginia University) in response to a prior article on segregating passive from active increases in the value of an asset in the context of marital dissolution.*

The June 2018 issue of *Business Valuation Update* carried an interesting article by Mark Filler, "Using Jensen's Alpha to Separate Active and Passive Appreciation." I thank Mr. Filler for attributing the article concept to our conversation.

The article is well written. There is a good exposition of the serial correlation-induced error and its correction using the Newey-West procedure, which is a useful technique to adjust for serial

*continued on page 7...*

## Do Not Use the Arithmetic Mean to Average Multiples

*By Gilbert E. Matthews, CFA,*
*Sutter Securities Inc. (San Francisco, Calif., USA)*

Valuation professionals should not use the arithmetic mean of multiples. It is mathematically incorrect because it gives excessive weight to high multiples. A multiple is an inverted ratio with price in the numerator. Therefore, the harmonic mean should be used as the appropriate measure of central tendency. As a cross-check, the median should also be considered. Although abnormally low multiples can overly affect the harmonic mean, excluding outliers can correct this.[1]

1 Outlying low multiples can distort the result. Since excluding a low outlier could be deemed to be selective, it is best to use a trimmed harmonic mean, excluding a high multiple for each low multiple excluded.

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**BUSINESS VALUATION UPDATE**

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The harmonic mean is calculated by: (i) taking the sum of the reciprocals of each value in a data series; (ii) dividing the sum by the number of values in the data series; and (iii) taking the reciprocal of that number. It is easy to calculate using Excel with the $f_x$ [Insert Function] button or clicking on Fn+Shift+F3. Select HARMEAN, scroll over the datapoints to be averaged, and click. Alternatively, use the Σ [sum] function and replace SUM with HARMEAN in the formula bar.

## The Median

The median is the midpoint of a range of numbers. It is a commonly used measure of central tendency approach and is a useful supplement to the harmonic mean for averaging multiples. In practice, the median of multiples is usually close to the harmonic mean.

The author has been using both the harmonic mean and the median in corporate valuations since the 1970s. In my experience, the median multiples are higher than the harmonic mean more often than they are lower than others; however, it is common for some medians of multiples within the same group of guideline companies to be lower than the harmonic mean while others are higher.

The median is not useful for small samples; with a limited number of guideline companies, the harmonic mean is the only useful measure of central tendency. The harmonic mean is superior to the median in another respect—because the median uses only one datapoint, it does not give any consideration to skewness in the data.

## Support for the Harmonic Mean

Using the harmonic mean of multiples is not a new concept. Graham and Dodd's classic book, *Security Analysis,* used the harmonic mean to average P/E ratios in 1951. The use of the harmonic mean for averaging multiples was explained in detail in a book chapter on fairness opinions published in 1990.[2] A classic valuation book, Shannon Pratt's *Valuing a Business,* explained in 1996, "The harmonic mean is used to give equal weight to each guideline company in summarizing ratios that have stock price or MVIC [market value of invested capital] in the numerator."[3]

Empirical analyses by Baker and Ruback in a 1999 Harvard working paper demonstrated that the arithmetic mean was a poor measure of central tendency for multiples of revenues, EBITDA and EBIT. They also concluded that the harmonic mean was somewhat better than the median.[4] Liu, Nissim, and Thomas, in a 2002 empirical study, arrived at the same conclusion.[5] Numerous subsequent studies have arrived at the same conclusion based on empirical data.[6] A few studies showed that the median was somewhat better than the harmonic mean,[7] others concluded that they were similar,[8] but all agreed that the arithmetic mean was an inferior approach.

### A Flawed Contrary View

In contrast, a 2015 *BVU* article argues that "the harmonic mean should be avoided because it is inherently biased low."[9] The article's authors correctly conclude that the median is superior to the arithmetic mean, but they argue that the harmonic mean should not be used. They rely on unsound reasoning in rejecting the harmonic mean. Their conclusions would be valid if they were examining datapoints with price in the denominator, such as dividend yields. Their analyses fail because they do not take into account the basic reason why the harmonic mean is appropriate for multiples: the fact that a multiple is an inverted ratio because price is in the numerator.

The authors acknowledge that the arithmetic mean "is most frequently higher than the

2 Gilbert E. Matthews and M. Mark Lee, "Fairness Opinions & Common Stock Valuations," in *The Library of Investment Banking*, Vol. 4, Robert L. Kuhn, ed. (Dow Jones Irwin, 1990): 381, 405-407.

3 Shannon P. Pratt, Robert F. Reilly, and Robert P. Schweihs, *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 3rd edition (New York: Irwin, 1996): 225.

4 Malcom Baker and Richard S. Ruback, "Estimating Industry Multiples." Working Paper. Harvard University (1999), pp. 4-5, available at hbs.edu/faculty/Publication%20Files/EstimatingIndustry_b4e64d71-c8fd-4a5e-b31a-623d3a7d02bc.pdf.

5 Jing Liu, Doron Nissim, and Jacob Thomas, "Equity Valuation Using Multiples." *Journal of Accounting Research* 40 (1) (2002): 135, 137, 157.

6 *E.g.,* Ingolf Dittmann and Ernst G. Maug, "Biases and Error Measures: How to Compare Valuation Methods," ERIM Report Series Reference No. ERS-2006-011-F&A; Mannheim Finance Working Paper No. 2006-07 (Aug. 25, 2008), pp. 2, 8, available at ssrn.com/abstract=947436; Stefan Henschke and Carsten Homburg, "Equity Valuation Using Multiples: Controlling for Differences Between Firms" (May 2009), p. 22, available at papers.ssrn.com/sol3/papers.cfm?abstract_id=1270812; Toby Tatum, "Harmonic Mean Value: The Appropriate Measure of Central Tendency," *Business Appraisal Practice* (3rd quarter 2011) 28, 31; Georgia Pazarzi, "Comparison of the Residual Income and the Pricing Multiples Equity Valuation Models," II *International Journal in Economics and Business Administration,* Issue 3, 88, 102 (2014); Jens Overgaard Knudsen, Simon Kold, and Thomas Plenborg, "Stick to the Fundamentals and Discover Your Peers," 73 *Financial Analysts Journal* 84, 104 (2017); William H. Black and Lari B. Masten, "Empirical Investigation of Alternative Measures of Central Tendency," 5 *Journal of Forensic Accounting Research* 216 (2020).

7 *E.g.,* Volker Herrmann and Frank Richter, "Pricing with Performance-Controlled Multiples," 55 *Schmalenbach Business Review* 194, 212 (2003); Andreas Schreiner and Klaus Spremann, "Multiples and Their Valuation Accuracy in European Equity Markets," Working Paper (Aug. 13, 2007), p. 12, fn. 5, available at SSRN: ssrn.com/abstract=957352.

8 *E.g.,* Mingcherng Deng, Peter D. Easton, and Julian Yeo, "Another Look at Equity and Enterprise Valuation Based on Multiples" (April 2010), pp. 15-16, available at ssrn.com/abstract=1462794; Thomas Plenborg and Rene Coppe Pimentel, "Best Practices in Applying Multiples for Valuation Purposes," 59 *The Journal of Private Equity* 55, 59 (Summer 2016); Emanuel Bagnal and Enrico Cotta Ramusino, "Market Multiples and the Valuation of Cyclical Companies," 10 *International Business Research* (Issue 12) 246, 252 (2017).

9 Robert M. Dohmeyer, Herbert Kierulff, and Janae Castell, "Mean, Median, Harmonic Mean: Which Is Best?" *Business Valuation Update,* Jan. 2015, p. 1.

median,"[10] but they erroneously assert that the arithmetic mean gives the same weight to each multiple.[11] They fail to recognize that the reason that the arithmetic mean is almost always higher is that it is upwardly biased by high multiples. Moreover, the distribution of multiples is almost always positively skewed.

They attempt to "prove" that the harmonic mean is biased using this statistically unsound analysis:

> To further test the bias of the harmonic mean, we used the random number generator in Excel. In Excel, if you type "rand()" into a cell, it will generate a random number between 0 and 1. Since the central tendency—median and average—of Excel's random generator *is* 0.50, we know in advance the true unbiased result.[12]

They then conclude that the mean and median in their test of "random numbers" were both 0.50 and the harmonic mean was 0.26. Based on this determination, they claim, "[W]e demonstrated that the harmonic mean is a biased low estimator of central tendency when data are distributed normally." They mistakenly assume that the appropriate measure of central tendency does not depend on the nature of the underlying data.

They concede the obvious fact (knowable even without using Excel) that the arithmetic mean and the median of numbers from 0.00 to 1.00 (or 0.01 to 0.99, or 0.10 to 0.90) is 0.50. If we take the reciprocals of numbers from 0.01 to 0.99 (analogous to ratios with price in the numerator), the harmonic mean and the median are 0.50 and the arithmetic mean is 0.19. This shows that, for reciprocals, it is the arithmetic mean that is a biased measure of central tendency. The question is when it is appropriate to average raw numbers or to average their reciprocals.

Is it more reasonable to average multiples using reciprocals? The exhibit shows that: (a) if an investor invested equal amounts in a $100,000 portfolio of four companies with P/E ratios of 50x, 25x, 15x, and 10x, the portfolio would have earnings of $5,667 and a multiple of 17.6x (the harmonic mean); and (b) if the investor bought equal amounts of earnings in each company (i.e., investing five times as much at a 50x multiple as in a 10x multiple), the portfolio's earnings would be $4,000 and its multiple would be 25x (the arithmetic mean).

### Equal Investment vs. Equal Earnings

| Equal investment: | | | Equal earnings: | | |
|---|---|---|---|---|---|
| Invested | P/E | Earnings | Invested | P/E | Earnings |
| $25,000 | 50.0x | $500 | $50,000 | 50.0x | $1,000 |
| $25,000 | 25.0x | $1,000 | $25,000 | 25.0x | $1,000 |
| $25,000 | 15.0x | $1,667 | $15,000 | 15.0x | $1,000 |
| $25,000 | 10.0x | $2,500 | $10,000 | 10.0x | $1,000 |
| $100,000 | 17.6x | $5,667 | $100,000 | 25.0x | $4,000 |

To give equal weight to each ratio with price in the numerator, it is necessary to use the harmonic mean—that is why it is the best measure of central tendency for multiples. The arithmetic mean gives five times as much weight to a 50x multiple compared to a 10x multiple, demonstrating that there is upward bias to an arithmetic mean of multiples. The harmonic mean of datapoints is always lower than the arithmetic mean. Because the arithmetic mean of multiples gives excessive weight to high multiples, it necessarily results in an overvaluation.

### Weighted Harmonic Mean

Some valuation experts favor the use of a weighted harmonic mean.[13] This method is appropriate

10 Id. at 4.

11 Id.

12 Id.

13 *E.g.,* Toby Tatum, "In Defense of Tatum's Law of Market Multiples," *Business Valuation Update,* April 2018, Special Supplement, p. 18.

for calculating the multiple of a weighted index. However, use of a weighted mean requires a subjective judgment as to what factor to use for weighting the multiples. Several alternatives could be chosen, such as market capitalization, revenues, free cash flow, and net income. One study has concluded that the accuracy of the harmonic mean can be improved by weighting the harmonic mean by the growth rate but not by other factors.[14]

Importantly, any weighting based on size necessarily gives more weight to larger guideline companies than to smaller ones. Why should larger companies be given greater weight? A weighted mean devalues the input from smaller guideline companies, even though the company being valued is commonly closer in size to them than to the larger ones.

### Regression Analysis

Rather than using a measure of central tendency for multiples, some writers have used a regression analysis for valuation purposes.[15] Regression analyses are not useful unless there is a large number of observations.[16] This approach, like the weighted mean, brings in an element of subjective judgment: Which factors (e.g., revenues, profit margins, growth rate, market value, and payout ratio) should be considered in the regression analysis?

Some studies have found that the regression approach fails in empirical tests.

> Finally, a regression-based approach to directly estimating valuation multiples does not necessarily improve valuation accuracy.... Further analysis reveals that the relationship between the financial ratios and ... multiples is nonlinear and hence, a linear regression model leads to suboptimal results.[17]

### Despite Its Merits, the Harmonic Mean Is Not Widely Used

In 2016, Hitchner asked a group of valuation professionals which averages they typically use for multiples. The replies: 72% said the median, 31% said the arithmetic mean, and only 16% said the harmonic mean.[18]

Although average multiples are used in most fairness opinions, a review of fairness opinions on EDGAR shows that the median is used far more often than the arithmetic mean and that the harmonic mean of multiples is rarely used (other than in fairness opinions by Bear Stearns, which had used the harmonic mean since the 1970s).[19]

The harmonic mean for averaging multiples has rarely appeared in published court decisions, most likely because the expert witnesses did not discuss the subject. The author's Westlaw search found only five relevant cases. The harmonic mean was accepted twice and rejected thrice. A 1999 study that addressed Tax Court

14 Ian Cooper and Neophytos Lambertides, "Is There a Limit to the Accuracy of Equity Valuation Using Multiples?" (2014), p. 22, available at papers.ssrn.com/sol3/papers.cfm?abstract_id=2291869.

15 *See, e.g.* Mark Filler, "Letter to the Editor," *Business Valuation Update,* August. 2006, p. 20. For a discussion of the use of regression analysis (which is outside the scope of this article), *see, e.g.* Aswath Damodaran, *Investment Valuation,* 3rd edition (Wiley, 2012), pp..464-66, 562-69; Henschke and Homburg, pp. 3-18; Sanjeev Bhojraj, Charles Lee, and David Ng, "International Valuation Using Smart Multiples," working paper, Cornell University 2003, available at semanticscholar.org/paper/International-Valuation-Using-Smart-Multiples-Bhojraj-Lee/0e8ce3d2ffdc87fe905a3b25bb9193f19326f2c6.

16 Baker and Ruback, p. 2.

17 Henschke and Homburg at 17. *See also, e.g.,* Volker Herrmann, *Marktpreisschätzung mit kontrollierten Multiplikatoren* (Cologne: Josef Eul Verlag, 2002): 233.

18 James R. Hitcher, "Poll Results Reflect Current Trends in Business Valuation," *Financial Valuation and Litigation Expert* (February-March 2017) at 6. Poll taken Feb. 3, 2016.

19 The author was chairman of Bear Stearns' Valuation Committee, which was responsible for all fairness opinions it issued from 1970 through 1995.

cases posited that arithmetic means were the poorest method for averaging multiples and that using reciprocals was the preferable method for averaging multiples.[20] However, the Tax Court has never discussed the harmonic mean.

Pratt wrote in 2001: "Although the harmonic mean is not used frequently, probably because it is unfamiliar to most readers of valuation reports, it is conceptually a very attractive alternative measure of central tendency."[21]

Despite numerous academic studies since then that demonstrate the harmonic mean's superiority, valuation professionals, investment bankers, or courts still do not widely use the harmonic mean. Many valuators are unfamiliar with the concept. Importantly, the harmonic mean is hardly ever discussed or even mentioned in books on corporate valuation.

Valuation practitioners should reject the use of the arithmetic mean for averaging multiples. Those who do not use the harmonic mean should review the available literature and decide whether they concur that it is the optimum measure of central tendency for ratios with price in the numerator. ◆

20 Randolph Beatty, Susan M. Riffe, and Rex Thompson "The Method of Comparables and Tax Court Valuations of Private Firms: An Empirical Investigation," 13 *Accounting Horizons* (Vol. 2) 177, 188-189 (1999).

21 Shannon P. Pratt, *The Market Approach to Valuing a Business* (New York; John Wiley & Sons, 2001): 133.

***Gilbert E. Matthews,*** *CFA, is chairman emeritus and a senior managing director of Sutter Securities Inc. (San Francisco). He has more than 50 years of experience in investment banking and has spoken and written extensively on fairness opinions, corporate valuations, and litigation relating to valuations.*

## Ask the Experts

**Q:** *During the pandemic, have the delivery fees to restaurants from services such as Grub Hub and Door Dash impacted profitability?*

**A:** In the initial stages of the pandemic, a lot of restaurants were not able to pass on all of that delivery cost, so they were spending a significantly higher component of revenues on delivery fees. As we have moved through the pandemic, they have been able to restructure and renegotiate those contracts, so that impact is a little less than it was back in the early stages. But a lot of restaurants took the position that they wanted to at least keep their employees working. If they were going to have to pay that extra delivery charge and were not able to pass all of that cost to the consumer, in the early stages, they were more willing to do that. But I think this is an area where you will see a lot of change going forward. I think that change has already started where those costs are being passed onto the consumer.

*Source:* Restaurant Valuation: Serving Your Clients During the COVID-19 Crisis, BVR webinar, Dec. 29, 2020; Lynton Kotzin (Kotzin Valuation Partners); available at sub.bvresources.com/trainingeventpast.asp?WebinarID=1629.

## Jensen's Alpha

*... continued from front page*

correlation. The article concludes with two estimates of passive appreciation in the value of the business at 14% and 19%, with active appreciation ranging between 81% to 86%.

The underlying data are provided in the article and are helpful in understanding where the analysis might have missed the forest for the trees. An exhibit in Mr. Filler's article (Exhibit 1) lists the monthly sales for all dealers as well as for the subject dealership.

The reported mean monthly growth is 1.54% for the entire market and 4.18% for the subject dealership. These numbers are used to support the superior growth (active appreciation) argument.

**Exhibit 1. Monthly Sales and Sales Growth: Subject Auto Dealer vs. All Auto Dealers**

| | Monthly Taxable Sales | | Percentage Growth | | | Monthly Taxable Sales | | Percentage Growth | |
|---|---|---|---|---|---|---|---|---|---|
| Date | All Dealers | Subject Dealer | All Dealers | Subject Dealer | Date | All Dealers | Subject Dealer | All Dealers | Subject Dealer |
| 2012-01 | 166,301,520 | 1,567,853 | | | 2014-01 | 195,458,782 | 2,331,977 | -5.1% | -7.6% |
| 2012-02 | 203,914,080 | 2,424,666 | 22.6% | 54.6% | 2014-02 | 201,808,218 | 2,538,249 | 3.2% | 8.8% |
| 2012-03 | 231,884,340 | 2,385,750 | 13.7% | -1.6% | 2014-03 | 247,344,218 | 2,830,659 | 22.6% | 11.5% |
| 2012-04 | 219,607,280 | 2,082,690 | -5.3% | -12.7% | 2014-04 | 270,159,527 | 3,452,058 | 9.2% | 22.0% |
| 2012-05 | 235,036,920 | 2,429,569 | 7.0% | 16.7% | 2014-05 | 277,868,182 | 3,344,469 | 2.9% | -3.1% |
| 2012-06 | 242,337,760 | 3,014,073 | 3.1% | 24.1% | 2014-06 | 269,988,545 | 2,964,895 | -2.8% | -11.3% |
| 2012-07 | 219,922,620 | 2,370,681 | -9.2% | -21.3% | 2014-07 | 272,275,764 | 3,058,648 | 0.8% | 3.2% |
| 2012-08 | 251,785,300 | 2,683,746 | 14.5% | 13.2% | 2014-08 | 296,737,218 | 4,188,274 | 9.0% | 36.9% |
| 2012-09 | 228,815,780 | 2,969,574 | -9.1% | 10.7% | 2014-09 | 274,696,509 | 3,797,085 | -7.4% | -9.3% |
| 2012-10 | 215,920,500 | 2,330,929 | -5.6% | -21.5% | 2014-10 | 260,074,236 | 3,242,868 | -5.3% | -14.6% |
| 2012-11 | 200,836,740 | 2,988,500 | -7.0% | 28.2% | 2014-11 | 222,055,273 | 2,936,493 | -14.6% | -9.4% |
| 2012-12 | 196,418,640 | 2,802,206 | -2.2% | -6.2% | 2014-12 | 252,858,236 | 3,544,975 | 13.9% | 20.7% |
| 2013-01 | 184,857,800 | 2,514,345 | -5.9% | -10.3% | 2015-01 | 188,985,527 | 2,753,190 | -25.3% | -22.3% |
| 2013-02 | 196,697,120 | 2,498,605 | 6.4% | -0.6% | 2015-02 | 220,220,018 | 3,361,755 | 16.5% | 22.1% |
| 2013-03 | 240,247,080 | 3,146,606 | 22.1% | 25.9% | 2015-03 | 261,690,545 | 3,946,725 | 18.8% | 17.4% |
| 2013-04 | 249,201,180 | 2,280,784 | 3.7% | -27.5% | 2015-04 | 289,215,545 | 4,663,143 | 10.5% | 18.2% |
| 2013-05 | 267,538,460 | 3,068,804 | 7.4% | 34.6% | 2015-05 | 297,840,836 | 4,768,389 | 3.0% | 2.3% |
| 2013-06 | 253,181,500 | 2,535,180 | -5.4% | -17.4% | 2015-06 | 320,027,127 | 3,444,988 | 7.4% | -27.8% |
| 2013-07 | 267,202,600 | 2,574,952 | 5.5% | 1.6% | 2015-07 | 301,884,673 | 4,160,141 | -5.7% | 20.8% |
| 2013-08 | 275,673,980 | 3,659,431 | 3.2% | 42.1% | 2015-08 | 309,864,655 | 4,591,129 | 2.6% | 10.4% |
| 2013-09 | 261,966,100 | 2,489,763 | -5.0% | -32.0% | 2015-09 | 298,271,709 | 4,513,471 | -3.7% | -1.7% |
| 2013-10 | 235,664,255 | 2,947,747 | -10.0% | 18.4% | 2015-10 | 296,260,927 | 3,933,215 | -0.7% | -12.9% |
| 2013-11 | 210,173,564 | 2,449,565 | -10.8% | -16.9% | 2015-11 | 252,789,673 | 4,089,600 | -14.7% | 4.0% |
| 2013-12 | 205,857,473 | 2,522,617 | -2.1% | 3.0% | 2015-12 | 266,578,109 | 4,646,079 | 5.5% | 13.6% |
| | | | | | | | Mean | 1.54% | 4.18% |
| | | | | | | | Delta–Excess Return | | 2.64% |

A well-known problem in using arithmetic averages of returns in time series analysis is that, as volatility increases, the arithmetic average of returns tends to overstate the real returns. For example, in this case, we see that, when we look at the annual sales for the period of analysis, the annual growth rates are much smaller than as projected above (Exhibit 3).

The real problem, also left unaddressed in the article, is much deeper. Jensen's alpha is estimated using a regression model. A regression model formed without establishing causation merely measures correlation and not causation. The active/passive attribution analysis is a causation-based analysis as articulated very well by Mr. Filler in one of his previous articles. That causation analysis is conspicuously absent in the current article and should form the bedrock of any further analysis.

**Exhibit 2. Annualized Growth (Using Average of Returns)**

| Growth | Market | Dealership |
|---|---|---|
| Monthly | 1.54% | 4.18% |
| Pro Annualized fit | 18.48% | 50.16% |

**Exhibit 3. Annualized Growth (Using Annual Sales)**

| Annual Sales | State | Dealer |
|---|---|---|
| 2012 | $2,612,781,480 | $30,050,237 |
| 2013 | $2,848,261,111 | $32,688,399 |
| 2014 | $3,041,324,709 | $38,230,650 |
| 2015 | $3,303,629,345 | $48,871,825 |
| Total Growth (3 years) | 26.44% | 62.63% |
| Annualized | 8.13% | 17.60% |

**Exhibit 4. Granger-Causality Wald Test**

| Test | DF | Chi-Square | Pr > ChiSq |
|---|---|---|---|
| ChDealer => ChState | 1 | 0.01 | 0.911 |
| ChState => ChDealer | 1 | 1.39 | 0.2378 |
| ChDealer => ChState | 3 | 1.44 | 0.6969 |
| ChState => ChDealer | 3 | 5.61 | 0.1323 |

Using the data provided in the article, the results of the missing causation test are provided in Exhibit 4.

This simple causation analysis using the Granger causality test fails to find any causal relationship between the changes in market revenues and changes in subject dealership revenues in either direction. The null hypothesis of no impact of changes in market-level sales on the changes in dealership sales or vice versa cannot be rejected. The oft-repeated argument that correlation is not causation appears to be true in this case. If the same market forces are driving automotive sales in the market and in the dealership, the revenue numbers will be correlated, which does not mean that one is driving the other.

Mr. Filler should identify the market forces that drive automobile sales for the market as well as the subject dealership, establish causation between these market forces and the dealership sales, measure their partial elasticities, and then partition the total growth in revenues/cash flows/value of the business into its active and passive components. I look forward to reading his revised article in a future issue of *Business Valuation Update*.[1]

Respectfully submitted,

Ashok B. Abbott, Ph.D. ◆

1 Mr. Filler's response to Dr. Abbott appears elsewhere in this issue.

## *Letter to the Editor:*

# Response to Dr. Abbott's Comments on Using Jensen's Alpha for Separating Active and Passive Appreciation

*Editor's note: This is a Letter to the Editor from Mark Filler that responds to comments from Dr. Ashok Abbott about Mr. Filler's prior article on the use of Jensen's alpha. Dr. Abbott's comments can be found elsewhere in this issue.*

I appreciate that Dr. Abbott took the time to read and respond to my letter to the editor. As usual, his comments are thoughtful and analytical, but it seems that he has neither understood the nature and purpose of my model(s) nor state law requirements for the apportionment of the appreciation during the marriage of a nonmarital asset into its active and passive components.

My models (see the May 2018 and June 2018 issues of *Business Valuation Update*) attempt to answer a simple question: If a subject company outperforms or underperforms its peers (the market) in terms of either sales or sales growth and operating profit, who is responsible for that, who made that happen, and what caused that result? In other words, how much of the subject company's performance is explained by the market as a whole and how much is explained by the application of management's knowledge, skills, abilities, and effort over and above that of the average manager? If we can isolate management's contribution to company success, it is but a small step to separate active from passive appreciation over the life of the marriage. But, before I delve into the topic, let me first deal with Dr. Abbott's criticisms of my June 2018 article.

Dr. Abbot levels two criticisms at my application of the Jensen's alpha concept to the measurement of the subject-company performance vis-a-vis its peers in the marketplace. The first is that the amount of variation in the monthly data is so large that it overstates sales growth over the four-year period. The second criticism is that the model fails to account for causation, specifically market forces, or economic indicators, that drive industry sales. Let me deal with them in turn.

Dr. Abbott states the obvious when he writes that summary data, e.g., converting months to quarters and quarters to years, will always reduce variation. But, when calculating Jensen's alpha, or other performance metrics such as Sharpe's ratio and Treynor's ratio, variation is a feature of the procedure, not a bug. All the information that enables us to distinguish one stock's return performance from another is contained in its variance—in fact, Yahoo Finance calculates its stock betas using monthly returns. I know of no performance metric that either relies on or encourages the use of annual returns. And, besides, since, in the instant case, we are measuring relative sales growth, any overstatement or understatement of that growth is subsumed in the comparative nature of the model. Therefore, summarizing the 48 monthly data points would make my analysis inoperative.

As to Dr. Abbott's second criticism, he claims that the separation of any appreciation in value during the marriage requires the demonstration of causation, either by market forces or by marital effort. However, this is just not true, as various states use different methods to make the allocation. For example, in some states, a party to a divorce can be given a certain rate of return on a nonmarital asset over the life of the marriage, and the remaining value assigned to the marital estate. Alternatively, in my own state of Maine, our law court has held:

> It is a spouse's dedication of time and skills to the property during the marriage that brings the property's income within the ambit of the marriage's "shared enterprise." *It is not necessary to prove that the spouse's involvement was responsible for the income produced by the*

> *property*. [*Hedges vs. Pitcher,* Maine Supreme Judicial Court 2008 ME 55 (emphasis added)]

In addition, in the same case, the court stated that market forces alone must be responsible for the appreciation in value if that increase is to be considered nonmarital. Therefore, in the state of Maine, no allocation between passive and active appreciation of the auto dealership would be required as the general manager devoted 50 hours a week to the business enterprise—all of the appreciation would be considered active and included in the marital estate as causation is presumed without demonstrating so.

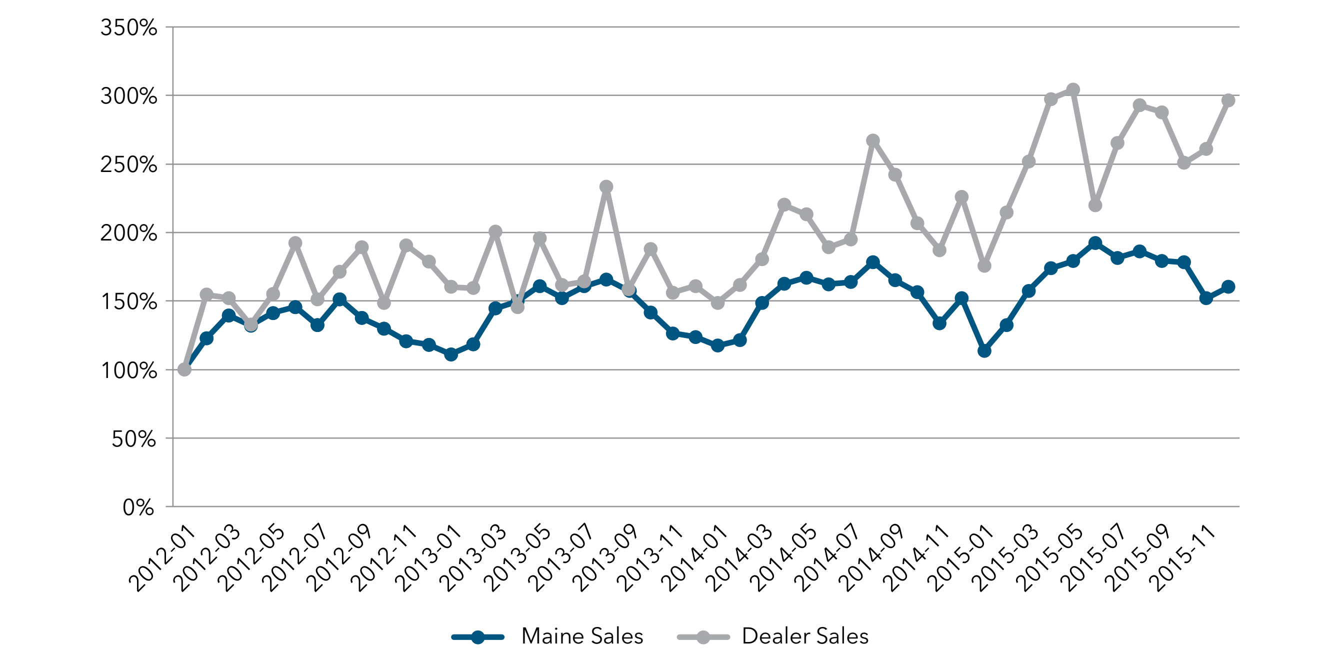
While many states treat the issue similarly, i.e., substantive active involvement in the business will make all (or some, if there is more than one owner) of the appreciation marital without demonstrating direct causation, let us assume we are in a different state with other rules of the road and that we must make a more accurate allocation of the increase in value of the dealership. I demonstrated one way to do this in the May 2018 issue of *Business Valuation Update* where monthly dealership sales were regressed against monthly statewide auto sales. Since market forces, whatever they are, affect all dealerships, there was no need to include them as separate independent variables in the regression model. Their influence was already included, or baked in, to both sets of monthly sales figures (see the exhibit on the next page for a trend analysis of monthly sales). In that model, $r^2$ represented the amount of variation in dealership sales explained by statewide auto sales and 1 - $r^2$ was the percentage of variation in dealership sales explained by management knowledge, skill, abilities, and effort. It would be a non sequitur to now claim that "market forces" somehow caused that portion of sales growth attributable to management. The article went on to develop a further allocation of appreciation to the marital estate by accounting for the increase in return on sales over the four-year period.

Subsequently, at the instigation of Dr. Abbott, in the June 2018 issue of *Business Valuation Update,* I computed the monthly sales growth for both the dealership and the statewide sales and again regressed one against the other, this time using the regression results to calculate Jensen's alpha. This model, too, demonstrated that the dealership had sales growth in excess of that turned in by the other 135 dealers in the state. Using the intercept and slope, the alpha and the beta, of the regression results, I showed how to work up an active appreciation allocation percentage. Once again, there was no need to include any independent variables that represented market forces, such as consumer sentiment, auto loan interest rates, gasoline prices, or changes in per-capita income. The effects of these variables, as well as average management performance, is already included in the monthly sales figures. All we want to know is: How did our subject dealership perform vis-a-vis the competition when all market participants have been exposed to the same market forces?

While I have written in the past regarding the requirement to demonstrate or prove causation, it was in the context of regression models that used as independent variables certain economic indicators as proxies for market forces. In those articles, I raised the question of which came first: the subject business's revenue or the economic indicators (market forces) supposedly driving those revenues. In the case of the auto dealership under review here, no such regression model was developed, introduced, or in play. Therefore, implications that I have not followed my own advice are off the mark.

What makes these two models different from those Dr. Abbott proposed is the way market forces are handled. Dr. Abbott includes them as independent variables in his models and regresses industry sales against them, thus treating them as direct explanatory variables that he claims cause passive appreciation. My two models, the monthly dollar model and the monthly percentage change model, treat statewide industry sales, or its monthly percentage change, as the independent variable and the subject dealer sales, or its monthly percentage

**Trend Analysis–Monthly Sales**




| Month | Maine Sales | Dealer Sales | Maine Sales | Dealer Sales | Month | Maine Sales | Dealer Sales | Maine Sales | Dealer Sales |
|---|---|---|---|---|---|---|---|---|---|
| 2012-01 | 166,301,520 | 1,567,853 | 100.0% | 100.0% | 2014-01 | 195,458,782 | 2,331,977 | 117.5% | 148.7% |
| 2012-02 | 203,914,080 | 2,424,666 | 122.6% | 154.6% | 2014-02 | 201,808,218 | 2,538,249 | 121.4% | 161.9% |
| 2012-03 | 231,884,340 | 2,385,750 | 139.4% | 152.2% | 2014-03 | 247,344,218 | 2,830,659 | 148.7% | 180.5% |
| 2012-04 | 219,607,280 | 2,082,690 | 132.1% | 132.8% | 2014-04 | 270,159,527 | 3,452,058 | 162.5% | 220.2% |
| 2012-05 | 235,036,920 | 2,429,569 | 141.3% | 155.0% | 2014-05 | 277,868,182 | 3,344,469 | 167.1% | 213.3% |
| 2012-06 | 242,337,760 | 3,014,073 | 145.7% | 192.2% | 2014-06 | 269,988,545 | 2,964,895 | 162.3% | 189.1% |
| 2012-07 | 219,922,620 | 2,370,681 | 132.2% | 151.2% | 2014-07 | 272,275,764 | 3,058,648 | 163.7% | 195.1% |
| 2012-08 | 251,785,300 | 2,683,746 | 151.4% | 171.2% | 2014-08 | 296,737,218 | 4,188,274 | 178.4% | 267.1% |
| 2012-09 | 228,815,780 | 2,969,574 | 137.6% | 189.4% | 2014-09 | 274,696,509 | 3,797,085 | 165.2% | 242.2% |
| 2012-10 | 215,920,500 | 2,330,929 | 129.8% | 148.7% | 2014-10 | 260,074,236 | 3,242,868 | 156.4% | 206.8% |
| 2012-11 | 200,836,740 | 2,988,500 | 120.8% | 190.6% | 2014-11 | 222,055,273 | 2,936,493 | 133.5% | 187.3% |
| 2012-12 | 196,418,640 | 2,802,206 | 118.1% | 178.7% | 2014-12 | 252,858,236 | 3,544,975 | 152.0% | 226.1% |
| 2013-01 | 184,857,800 | 2,514,345 | 111.2% | 160.4% | 2015-01 | 188,985,527 | 2,753,190 | 113.6% | 175.6% |
| 2013-02 | 196,697,120 | 2,498,605 | 118.3% | 159.4% | 2015-02 | 220,220,018 | 3,361,755 | 132.4% | 214.4% |
| 2013-03 | 240,247,080 | 3,146,606 | 144.5% | 200.7% | 2015-03 | 261,690,545 | 3,946,725 | 157.4% | 251.7% |
| 2013-04 | 249,201,180 | 2,280,784 | 149.8% | 145.5% | 2015-04 | 289,215,545 | 4,663,143 | 173.9% | 297.4% |
| 2013-05 | 267,538,460 | 3,068,804 | 160.9% | 195.7% | 2015-05 | 297,840,836 | 4,768,389 | 179.1% | 304.1% |
| 2013-06 | 253,181,500 | 2,535,180 | 152.2% | 161.7% | 2015-06 | 320,027,127 | 3,444,988 | 192.4% | 219.7% |
| 2013-07 | 267,202,600 | 2,574,952 | 160.7% | 164.2% | 2015-07 | 301,884,673 | 4,160,141 | 181.5% | 265.3% |
| 2013-08 | 275,673,980 | 3,659,431 | 165.8% | 233.4% | 2015-08 | 309,864,655 | 4,591,129 | 186.3% | 292.8% |
| 2013-09 | 261,966,100 | 2,489,763 | 157.5% | 158.8% | 2015-09 | 298,271,709 | 4,513,471 | 179.4% | 287.9% |
| 2013-10 | 235,664,255 | 2,947,747 | 141.7% | 188.0% | 2015-10 | 296,260,927 | 3,933,215 | 178.1% | 250.9% |
| 2013-11 | 210,173,564 | 2,449,565 | 126.4% | 156.2% | 2015-11 | 252,789,673 | 4,089,600 | 152.0% | 260.8% |
| 2013-12 | 205,857,473 | 2,522,617 | 123.8% | 160.9% | 2015-12 | 266,578,109 | 4,646,079 | 160.3% | 296.3% |

change, as the dependent variable. Since market forces affect both the dependent and independent variables simultaneously, then monthly sales results for both include the influence of market forces and average management effort. Adding more independent variables that represent economic indicators would not only needlessly complicate things but double count their effect in the model, effectively making the model useless.

This simultaneity of exposure to both market forces and average management effort leads to the conclusion that there is no Granger causation either way. It could not be any other way—statewide sales cannot drive single-dealer sales as statewide sales are merely an agglomeration of the 136 individual dealers in the state. Statewide sales are not causative—they are merely correlational, which is all we need when we seek to measure relative performance. To repeat: The causative factors, market forces, and average management effort are included in the monthly sales results and, therefore, do not need to be separately stated nor is it necessary to demonstrate causation in a direct manner when it has been subsumed in an indirect manner.

Dr. Abbott ends his letter by suggesting that the valuation analyst use an appreciation parsing model that he has created and that I criticized in the May 2018 article. Before doing so, the valuation analyst should know that Dr. Abbott has never acknowledged, responded to, or fixed the fatal flaws I highlighted in my critique.

The final question to be answered is: Do the active appreciation apportionments shown in the May 2018 and the June 2018 articles appear reasonable in light of the exhibit and the fact that, in the four-year period, the general manager almost doubled sales ($27 million to $51 million) and quadrupled profits ($525,000 to $2.1 million)?

Sincerely,

Mark G. Filler, CPA/ABV, CBA, CVA, AM
Filler & Associates PA
Portland, Maine ◆

## April Tip From the Field

### Disclosures About Professional Competency

Valuation analysts are often called upon to appraise a business in an industry in which they have no historical experience. In those cases, the issue of professional competency may arise. USPAP has a competency rule that requires you to disclose the lack of competency prior to accepting the engagement. The AICPA, NACVA, and ASA do not require any of this disclosure upfront, so best practice would be to disclose it. Whether the client wants to hire you or not, you can come to an understanding over whether your years of experience, knowledge, and expertise will make up for your lack of knowledge in that specific industry. In some cases, the client may allow the analyst to learn about the industry and may be willing to pay for that. If not, an analyst needs to be careful and be willing to turn down an engagement when he or she knows he or she does not have the level of expertise and knowledge needed to conduct a proper analysis.

*Source:* Business Valuation Ethics, BVR webinar, Feb. 3, 2021; Scott Saltzman (Saltzman LLC); available at sub.bvresources.com/TrainingEvent.asp?WebinarID=1634.

# What Business Appraisers Can Learn From the GameStop Saga

*By Joseph W. Thompson, CFA, ASA,*
*Griffing Group (Oak Park, Illinois, USA)*

The phenomenon surrounding GameStop Corp (NYSE: GME) over the past several months has garnered significant media attention, regulatory review, numerous lawsuits, and political discourse. The focus in most media coverage has been on "squeezing the short sellers," but professional options-trading firms have likely suffered significant losses and contributed to the run-up in GME stock price through forced hedging. While the squeezing of short sellers of GME stock likely had some impact, the overall net change in GME stock shorted is not nearly as significant in size as the increased exposure to GME stock from exchange-traded options.[1]

This article will not cover the crowd-sourcing aspect as significant media coverage has already been devoted to that topic. Instead, this article provides an overview of the mechanics that drove the losses for the short sellers and a more in-depth review of the options trading that exacerbated the run-up in GME's stock price during January 2021. Therefore, an appropriate subtitle for this article can well be: "Picking Up Nickels in Front of Bulldozers: How Options Trading Firms Lost to the Reddit GameStop Crowd."

The lesson for appraisers in this saga is to be aware of potential pricing issues when using guideline public companies in the Reddit orbit. In the short term, the underlying price may not be representative of its "fundamental value" during the volatile period.

1 Short sellers are taking a financial position that profits if the underlying security decreases in value.

### Summary Trading Highlights

What has occurred over just the past 30 trading days is nothing short of remarkable:

- Between Jan. 13, 2021, and Jan. 29, 2021, more than 100 million shares of GME stock traded per day on average, despite the company having fewer than 50 million shares in its public float.[2] In other words, each of the company's publicly traded shares changed hands 2.2 times per day, on average. With average daily trading volume equal to 223% of its public float, GameStop shares traded at more than 100 times the relative velocity of the tech giant stocks in the "FAANG" group,[3] which recorded ADTV/float ratios of approximately 1% to 2% during the same period.

- Thirty-day implied volatilities from exchange-traded options on GME stock exceeded 500% from Jan. 27, 2021, through Jan. 29, 2021.[4] This implies that investors expect GameStop's stock price will move by approximately *35% each day* during the next 30 days.

- Despite the fundamentals of its operations being largely unchanged during the period, GameStop's valuation multiples increased significantly between Oct. 1, 2020, and Jan. 29, 2021. The following exhibits demonstrate the trend in GameStop's ratio of enterprise value to projected 2021 EBITDA. Exhibit 1 illustrates that the EV/EBITDA multiple

2 In general terms, the public float for the stock of a public company is the number of shares that are available to be traded.

3 FAANG is an acronym for Facebook, Amazon, Apple, Netflix, and Google (aka Alphabet Inc.).

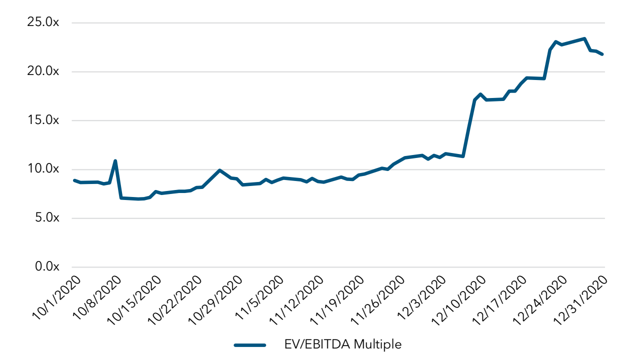
4 Source: CBOE GME options data.

increased from approximately 10x to 25x from October 1 to December 31. Exhibit 2 demonstrates that, during the last two weeks of January, the multiple increased dramatically, reaching as high as 300x.

### Squeezing Short Sellers

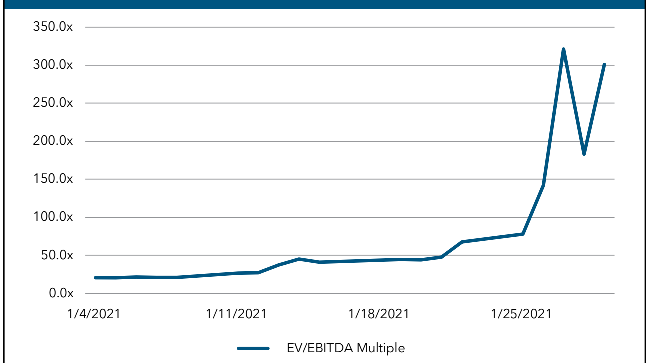
Anyone that sells short or uses financial leverage where losses are theoretically unlimited (e.g., a hedge fund) will be subject to a capital requirement from their broker or clearing firm. For a hedge fund, clearing firms will typically look at both the net liquidation value of the positions (colloquially called "net liq") and the riskiness of the positions within the overall portfolio. As the risk increases in a hedge fund's positions, the clearing firm will likely require the hedge fund to decrease the risk in the portfolio and/or post additional capital (i.e., increase the margin requirement) to increase the net liquidation value of the portfolio.

**Exhibit 1. GameStop EV/EBITDA Multiple Oct. 1, 2020, to Dec. 31, 2020**




Source: S&P's CapitalIQ financial database.

**Exhibit 2. GameStop EV/EBITDA Multiple Jan. 4, 2021, to Jan. 29, 2021**




Source: S&P's CapitalIQ financial database.

It is likely that many hedge funds that sold GME short in 2020 were trapped in a "liquidity spiral" in 2021. Typically, liquidity spirals are associated with decreasing asset values, but the concept holds true for increases in asset values as well. Exhibit 3 depicts a liquidity spiral.

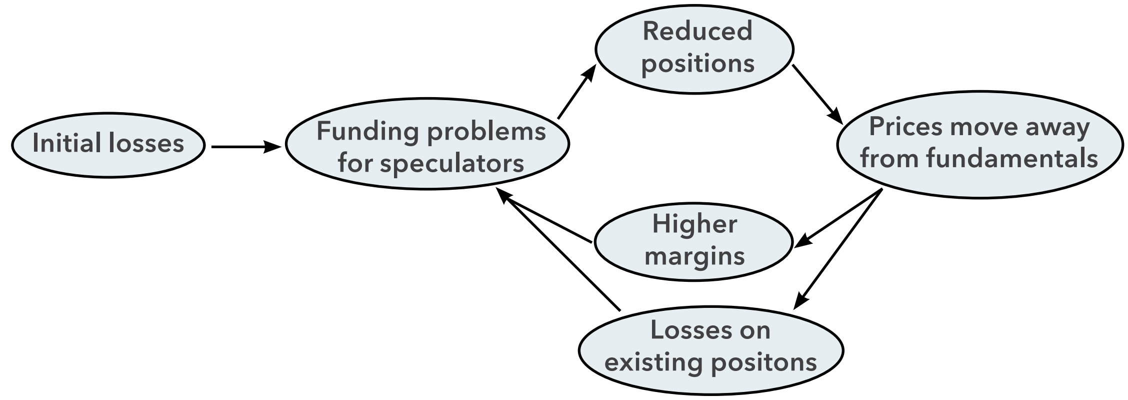
As retail investors drove up GME's stock price and the associated volatility, it is likely that hedge funds and similar investors were forced to decrease their short positions and/or infuse capital into their accounts. As capital infusion has its natural limitations, many hedge funds were forced to reduce their short positions in GME stock by purchasing GME stock or use other hedges such as purchasing call options on GME stock driving the price further away from the "fundamental value."

GME's annualized stock price volatility in 2020 typically was around 100% (as it suffered from the impact of the pandemic) but, in January 2021, implied volatilities on the stock's exchange-traded options quickly accelerated from the low-100%-range to the mid-500%-range by the end of the January. Further, GME stock price movements in January had little to no correlation to other assets that previously might have been considered a hedge (e.g., shares of GameStop's competitors or broad-based stock indices). As a result, the risk to any portfolio with a short exposure to GameStop would have increased dramatically and associated margin requirements would have increased in kind.

*The Short Sellers Were Not as Significant as Derivative Contracts*

On a net basis, it would appear that short sellers of GME stock were not likely the largest contributor to the meteoric rise in the stock price. For example, the short interest in GME stock (i.e., total shares sold short) was typically around 70 million shares

**Exhibit 3. Liquidity Spiral**




Source: S&P's CapitalIQ financial database. Note that short interest positions are not real time in nature (i.e., might be stale).

between October 2020 and mid-January 2021 and only declined to 61.8 million as of Jan. 29, 2021 (less than 8 million when average daily trading volume neared 100 million shares and the options impact described below is more significant). While some short sellers were likely squeezed out and had to close positions at significant losses, other hedge funds/investors have likely taken short positions at much higher prices for GME shares, keeping the net change in short interest lower.

As discussed in the next section, the more likely cause for the increasing price was option market makers hedging their positions while Reddit-inspired call options holders reaped significant gains on their holdings.

### Impact of Options on GME Shares

In various interviews, many retail investors noted purchasing call options on GME shares, and the data support those claims.[5] For example, the open interest (OI)[6] in the GME $30 call options expiring Jan. 15, 2021, was approximately 20,000 contracts on Jan. 8, 2021, when the stock price was only $18. Since each contract has a 100 multiplier (i.e., each contract has the right but not the obligation to purchase 100 shares of GME stock at $30 per share), that option series alone held the rights to purchase more than 2 million shares (20,000 contracts times 100 shares per contract).

*A Primer on Delta Hedging*

Before covering the impact of the demand for GME stock from exchange-traded options, it is important to explain how options-trading firms typically hedge their "deltas."

The delta of an option measures the change in the value of an option for a $1 change in the price of the underlying security. For example, the GME $30 call options expiring on Jan. 15, 2021, had a delta of approximately 5 on Jan. 8, 2021. If GME stock increased by exactly $1,

5 Call options give the purchaser the right but not the obligation to purchase the underlying security at the contractual price on or before the expiration date. If the stock is trading at less than the exercise price, then the call option holder would decline the option.

6 Open interest (OI) is the net number of contracts that exist for a specific option contract. For example, if Investor A purchased 100 call option contracts on GME shares with an exercise price of $30 expiring on Jan. 15, 2021, from Investor B, and then Investor B purchased 100 contracts with the same terms from Investor C, then the OI from those trades is 100 contracts even though 200 contracts traded as Investor B is net zero contracts.

it would be expected that the option contract would increase by $5 ($0.05 on the option list price that does not factor in the 100x multiplier). If an options trading firm wanted to remain "delta neutral" or be indifferent to the stock price movement of GME, it would purchase five shares of GME for every call option it sold to hedge its delta risk. On the flip side, if it purchased the contract, it would sell five shares of GME stock to remain delta neutral.

Adding to the complexity of trading options, the delta of an option is not constant. The delta will change as the underlying price of the security changes (i.e., the "gamma"). For example, Exhibit 4 illustrates the change in $30 call option for GME expiring on Jan. 15, 2021.

As illustrated in Exhibit 4, the delta for the call changed significantly between the two dates. If the seller of the option initially hedged the option by buying five shares, the seller would have needed to buy an additional 87 shares to hedge its short position between January 8 and January 14. For those who sold those options on or before January 8, this represents a classic case of "picking up nickels in front of bulldozers," an adage of floor traders when selling out-of-the-money calls for low premia. For this one example, of which there are many more, the holders of 20,000 of those call options achieved net gains of approximately $25 million on an investment of approximately $200,000 (a 12,500% return in four days!).

*Why Delta Hedging Is Important for GME*

**Exhibit 4. Change in GME $30 Call Option**

| GME $30 Call (Jan. 15 Exp) | | | |
|---|---|---|---|
| Trading Date | Delta | Option $ | GME Stock |
| 1/8/2021 | 5 | $0.09 | $17.25 |
| 1/14/2021 | 92 | $12.62 | $39.91 |

Source: CBOE GME options data.

While options trading firms and perhaps hedge funds may target to be "delta neutral," retail investors purchasing GME call options most likely were not delta hedging but speculating on the increase in the stock price. As a result, when the stock price increased and options-trading firms were forced to keep purchasing more shares of GME, the buyers of the call options were not offsetting the demand for GME shares by selling shares. To illustrate the potential impact of delta hedging by the call option sellers, I calculated the change in the deltas for existing call options at the close on January 8 through January 14 in Exhibit 5.[7]

In just four trading days, the sellers of call options were exposed to the risk of being synthetically short an additional 12 million shares of GME stock. Those synthetically short shares would not be included in the short interest calculation of approximately 70 million shares discussed above.

Further, between Jan. 8, 2021, and Jan. 27, 2021, the amount of delta exposure to call options more than doubled, increasing to nearly 43 million deltas. In other words, holders of call options had the equivalent of owning 17 million shares

7 For clarification, any options traded post-Jan. 8, 2021, were not included in the delta calculation for Jan. 14, 2021 (e.g., the open interest in exercise prices more than $40 that did not exist on January 8 were excluded from this calculation).

**Exhibit 5. Change in Deltas Jan. 8, 2021, to Jan. 14, 2021**

| Trading Date | Total Call Delta | Open Interest |
|---|---|---|
| 1/8/2021 | 17,000,000 | 360,000 |
| 1/14/2021 | 29,000,000 | N/A |
| Change | 12,000,000 | N/A |

Source: CBOE GME options data and S&P's CapitalIQ financial database using closing prices.

on Jan. 8, 2021, but increased that amount to 43 million shares held by January 27 (Exhibit 6).

**Exhibit 6. Change in Deltas**
**January 8, 2021, to Jan. 27, 2021**

| Trading Date | Total Call Delta | Open Interest |
|---|---|---|
| 1/8/2021 | 17,000,000 | 360,000 |
| 1/27/2021 | 43,000,000 | 475,000 |
| Change | 26,000,000 | 115,000 |
| *% Change* | *153%* | *32%* |

Source: CBOE GME options data.

While some of the increase can be explained by the 32% increase in the number of outstanding call option contracts, a majority of the increase in delta exposure is explained by the Reddit investors buying well out-of-the-money (i.e., "call wing")[8] options that initially were low delta options but transitioned to high delta options in the run-up of GME stock price, as set forth in the example above. The 26 million share exposure is significantly greater than the 8 million share reduction in the short interest of GME stock.

### Summary

While the GameStop saga has far to go, it appears that most of the initial run-up in the stock price can be attributed to the increase in demand from Reddit-based retail traders and those selling call option contracts covering their risk exposure. While straight short sellers have likely contributed to the run-up to some extent, the crowd-sourcing of demand from Reddit and options trading firms appear to be causing much of the spike in GME's stock price as options-trading firms sustain large losses while attempting to hedge against catastrophic losses.

As a result of this new phenomenon from Reddit stocks (or potential other social media-driven pricing), appraisers may need to be aware of guideline public companies that might have pricing aberrations affecting the underlying valuation multiples. ◆

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8 For example, when GME was trading at ~$17 on January 8, there were significant purchases of calls with exercise prices of $25 or greater that in normal times would not have a realistic chance of becoming profitable positions.

# 14 Ways to Detect Misrepresentations in Business Interruption Claims

Business interruption insurance claims are on the rise, and analysts need to be on the lookout for misrepresentations. Michael Haugen (JS Held) conducted a session on this at the recent AICPA FVS Conference, and it's an area where valuation experts would do well to bolster their knowledge and skills in financial forensics. During his session, Haugen gave some tips on how to "sniff out" misrepresentations in these claims.

Haugen, who is a CPA as well as certified in financial forensics and fraud, stressed that a misrepresentation does not necessarily mean fraud—it can simply mean an honest mistake. But a great deal of real fraud is going on in this area. Haugen says the FBI estimates that non-healthcare-related insurance fraud losses exceed $40 billion a year, which includes fraud other than that related to business interruption. In any event, there are "great opportunities" for analysts on either the business-owner (insured-party) side or the insurance-company side. The huge amount of fraud behooves insurers to engage forensic accounting and valuation experts to accurately measure losses.

Haugen classifies misrepresentations in three categories: (1) incorrect assertions; (2) omissions of fact; and (3) incorrect records. He points out that there is some overlap in the techniques in each category. For instance, a technique for detecting an incorrect assertion may also be applicable to detecting an omission of fact.

## Detecting Incorrect Assertions

*1. Do some online research.* What you can dig up over the internet can help uncover an incorrect assertion. In one engagement, Haugen was working with a hotel that catered to the construction industry, i.e., many of its guests were construction workers who were on local jobs. The hotel experienced some property damage and had to close off some rooms. Of course, revenue dropped and then stabilized at a point less than the preloss level, which is what you would expect. Then, all of a sudden, revenue dropped again. Was this subsequent drop due to the same damage ("covered peril") and would thus be included in the loss measurement? Members of hotel management asserted that repairs to the roof caused them to close off more rooms, which triggered the further drop in revenue. The trouble was that the new drop in revenue did not coincide with the timing of the roof repairs. A little online research revealed that a large nearby construction project had ended at a time that coincided with the drop in continuing revenue. This triggered more questions to management, and it was eventually determined that the additional revenue loss had nothing to do with the damage, so the projections had to be revised so as to not overstate the loss revenues.

*2. Look for corroborating evidence.* It's important to confirm the narrative about the loss with other sources, such as data from accounting records or other documents. In one case, Haugen was measuring the loss at a manufacturer that had two different plants. A fire shut down one of the plants, and the work was shifted to the other plant. The business income loss claim included increased labor expenses due to outsourcing to third-party labor, which was more expensive than in-house labor. To corroborate this, budgets were examined that revealed that outsourcing was planned in the normal course of business. This did not match the narrative told to the analysts about the extra expense due to the damage.

*3. Go to the source.* We all know that stories change as they are transferred from person to person. Haugen had an engagement involving a farming operation where an attorney presented the business interruption loss claim that included some continuing labor costs. In farming operations, it's common for farmers to set up different entities that perform different services, so

Haugen requested a phone call with the farm owner himself along with the attorney. Upon asking some questions, he learned that the labor actually belonged to a completely separate business, not the entity under which the lost income claim was being presented. A follow-up discussion with the insurer helped identify the correct amount of continuing expenses.

### Detecting Omissions

*4. Ask open-ended questions.* When you are finished asking limited-scope and leading questions when measuring losses, ask this: Is there anything else you want to tell me? Now that the interviewee knows what you are trying to accomplish, it gives him or her the opportunity to tell you anything else he or she thinks is important. "You may be surprised what you find out," says Haugen.

*5. Conduct loss-period analytics.* This is a technique useful for a business that continues to operate at either reduced capacity or at a temporary location. Analyzing continuing revenue and expense data (albeit at a diminished capacity) can help determine what the business might reasonably have expected to accomplish but for a covered peril. Haugen related one engagement where a manufacturer ordered a new piece of expensive equipment designed to increase the services available to its customers. The equipment arrived damaged, and it took 10 months to do the repair. To measure the business loss, he looked at what happened once the repaired equipment got up and running and compared it to what was actually going on during the time that the manufacturer should have been running with that equipment. Continuing revenue had dropped, but it was due to a drop in demand, not because the new equipment was not functioning. The point is you can get into some good details looking at what's going on during a loss period to assess the reasonableness of your expected revenues and expenses.

*6. Do a clawback analysis.* This is an analysis that involves taking a look at what happened after a business reopens after damages have been repaired. Haugen says it is rare to get a chance to do this unless you are looking at what's called an extended period evaluation. But it can function as a litmus test with regard to the reasonableness of your expectations. In one case involving a restaurant, he was able to analyze the operations after the business reopened and revised expectations downward to reflect a change in structure that had not been accounted for in the original analysis.

*7. Look at payroll.* If a small business has a few key employees that it relies on for its success, consider looking at payroll records that might lead you to believe that there's been a substantial change in staffing. This might affect your understanding of what a business could have accomplished had a covered peril not occurred.

*8. Evaluate balance sheets.* There is often the tendency to focus too much on income statements and lose sight of the importance of the capital structure and the resources of the organization. Check the balance sheet for sharp increases in assets and liabilities. For example, a spike in the accounts receivable might lead to questions about understanding whether any channel stuffing might be going on. Take a look at the working capital—is it sufficient to support your forecast of continued revenue growth?

*9. Consider the property loss claim.* If there is a property loss claim with respect to the damage, take a look at it and compare it with what you are doing on the business interruption loss claim. For example, the property loss claim may include inventory no longer usable. Has that inventory been written off? This will involve coordination with the other experts that might be involved in the file, whether it be other consultants or adjusters that the insurer engaged.

### Detecting Incorrect Records

*10. Do a book-to-tax reconciliation.* The primary tool to detect incorrect records is to do a book-to-tax reconciliation, that is, examine the differences between the accounting records and what is reported on the tax returns. The business owner will typically assert that the tax returns are correct, so something is missing in the accounting books, such as year-end adjustments not being recorded. If you can't reconcile the two, it doesn't necessarily mean fraud is going on, but this may limit the extent that you rely on certain internal books.

*11. Review source documents.* In one case, a business claimed it outsourced production and provided the materials, so there should be no savings for material expense in the business loss claim. Haugen checked the invoices from the outsourcing company to verify that this was indeed the case.

*12. Do a lien search.* If you examine the balance sheet and something doesn't seem right (such as an amount for accounts receivable but nothing for accounts payable), consider doing a lien search against the business to give you a clue that additional investigation may be needed.

*13. Consider industry data.* To test the reasonableness of financial data, check industry benchmarks. For example, if the business owner claims a 30% cost of goods sold, is that in line with industry averages? If not, the owner needs to explain.

*14. Examine trends and a vertical analysis.* This is helpful when a business has multiple locations and you are measuring a loss at one of the locations. Trend and vertical (common size) analysis can help you spot abnormalities such as a big spike in revenue at one location that can influences your expectation of continuing revenue. The business owner needs to explain these abnormalities to see whether they are legitimate or an error in accounting records.

You may be thinking that these techniques can take a lot of time and effort, which, of course, can mean extra costs. How do you determine how far to go? Haugen advises that you work with the insurance carrier and business owner when sorting out potential misrepresentations and whether or not to take the next step and try to flush out the correct answer. Identify the issues and the potential impact on the claim, and provide an estimate of what it might cost to address them. Be sure to disclose any set of parameters or instructions you are given that would limit what you would recommend doing if you were to fully investigate the issues.

This is just a summary of what was discussed during the session. A recording is available, so, for information on how to access the event archive, go to aicpa.org/interestareas/forensicandvaluation/cpeevents.html. ◆

# New BVR 'Power Panel' Series Offers Seasoned Insights on Timely Issues

The first in a series of "power panel" BVR webinars drew a huge audience and brought together highly experienced thought leaders in the profession to address current issues via questions from the audience (some on video). The panel, moderated by Jay E. Fishman (Financial Research Associates), consisted of Michelle F. Gallagher (Adamy Valuation), Ken Pia (Marcum), and Jeffrey S. Tarbell (Houlihan Lokey). They fielded questions about valuations amid COVID-19, PPP loans, tax affecting pass-through entities, ESOP valuations, and the future of the profession. They also discussed the recently proposed revision to the *International Glossary of Business Valuation Terms*.

The next BVR power panel webinar will be on April 6, 2021.[1] The format will be similar to the last one, with each panel member giving some overall observations and then diving right into audience questions. Here are some good insights from the last session.

**Working harder.** One audience member asked: "All else equal, is it more work to perform a valuation during these COVID-19 times? If you had to add some COVID-19-specific procedures and analyses, were you also able to reduce or cut some procedures and analyses that you typically performed prior to COVID-19?" Panel members agreed that, yes, performing valuations in a COVID-19 environment requires more work, especially since it requires a move away from the simple CCF to a complicated DCF with multiple scenarios and forecasts. Adding to the complications is getting forecasts from management, which can be particularly problematic—especially if the analyst is on the "outside looking in" from a litigation perspective.

The feeling also is that there has not been any chance to cut down procedures that were historically performed—and neither have any efficiencies been discovered in the new procedures. No "magic bullet" has been found that will help tackle all of the new problems you will encounter—it's simply a matter of dealing with more uncertainty than before.

**Pinpointing 'known or knowable.'** A question came up that has become recurring: "When was the virus known or knowable?" It is difficult to pinpoint an all-purpose exact date, the panel noted. It should really be based on the analyst's own research in the context of the subject company. When faced with uncertainty in valuation decisions, it's important to look to the marketplace. When did the overall market tank? (Some use Feb. 24, 2020.) But when did the market tank for the subject company's industry? You will most likely find that it will be easy to say when the virus was and was not known or knowable—but there will be a gray period of a few weeks when it will be a "maybe."

All that analysts can do is to put as much information in their reports as possible about what was known and available at the time. Be very careful about dates and disclose as best you can about your assumptions. In terms of supporting assumptions about recovery, the panel remarked about an "excellent" report from McKinsey that includes a chart that shows projected small-business recoveries by industry.[2]

**Retrospective valuations.** In a litigation context, if you explain the concept of "known or knowable" to an attorney, the likely response will be: "That's

1 sub.bvresources.com/TrainingEvent.asp?WebinarID=1640.

2 mckinsey.com/~/media/McKinsey/Industries/Public and Social Sector/Our Insights/US small business recovery after the COVID 19 crisis/US-small-business-recovery-after-the-COVID-19-crisis-vF.pdf.

all well and good, but what's the value today?" Some courts may be bound by a valuation done today that has a valuation date of before the pandemic and does not take into account the impact of the virus. But, in other cases, such as marital or estate, assets need to distributed or sold that may have plummeted in value. The panel noted that one possible option is to do another appraisal and consider COVID-19 as a hypothetical condition under SSVS and under USPAP and make full disclosures about the hypothetical assumptions.

Another option—possibly better—is to do a valuation with a more current date and add in the impact of the virus. The trouble with redoing a valuation with a prior date is that you technically wouldn't have access to current financial results. For example, if you did a valuation as of October 2019 and you do another one today, you would have access to 2020 financial results. On the other hand, if you went back in time to October 2019 and added in a hypothetical condition, theoretically you wouldn't be able to see 2020 results.

**BV glossary.** A question came up about the recently proposed revision to the *International Glossary of Business Valuation Terms*, the current version of which appears in some shape or form in all of the professional standards.[3] The panel pointed out that some new terms and methodologies in the glossary could create a problem—especially in a litigation context—if the glossary is made part of the authoritative standards. Some of the new glossary entries include methodologies that are unknown to some practitioners, so that may create a problem if opposing counsel asks the expert if he or she used these methodologies. The panel also suggested that the definitions be put into context. For example, if a term is used primarily for financial reporting purposes, the glossary should explain that, or, if a term is used primarily in a particular country, the glossary should point that out as well.

*Editor's note: The AICPA subsequently voted not to include the new glossary in its valuation standards.*[4]

**Future leadership.** A question from the audience asked about the next generation of leaders in the profession. Are up-and-comers being prepared to step into the shoes of the current leaders? The answer is a definite "yes" in that the different valuation professional organizations (VPOs) have made an effort to attract young talent to serve on committees and contribute to education and marketing activities. There are many bright young people in the profession, but the key is for them to commit to volunteering their time to keep moving the profession forward. Whether it be the ASA, AICPA, NACVA, or whatever organization you belong to, there are opportunities to do this.

Another way to foster future leaders is to give them writing and speaking opportunities. For example, the panel noted that the upcoming new edition of Shannon Pratt's classic text *Valuing a Business* will have seasoned experts and young rising stars co-writing chapters.

**Panel returns.** The panel also addressed audience questions about working capital, tax affecting pass-through entities, trends in ESOP valuations, PPP funds, and more. You can watch a replay of the session, which is free if you are a BVR Training Passport holder.[5] The next "power panel" session is scheduled for April 6, 2021.[6] Bring your questions! ◆

3 "Massive Overhaul of Global BV Glossary in the Works," *Business Valuation Update*, Vol. 27, No. 2, February 2021.

4 bvresources.com/articles/bvwire/aicpa-votes-to-exclude-new-bv-glossary-from-standards (Feb. 24, 2021).

5 sub.bvresources.com/bvstore/cd3.asp?pid=CD752.

6 Power Panel: Live Expert Answers for Today's Tough BV Questions, Tuesday, April 6, 2021, 10:00 a.m.-11:40 a.m. PT/1:00 p.m.-2:40 p.m. ET; moderated by Jay E. Fishman (Financial Research Associates); sub.bvresourcesT.com/TrainingEvent.asp?WebinarID=1640.

# *BVU* News and Trends

**A monthly roundup of key developments of interest to business valuation experts.**

## Regulators, Standard-Setters, VPOs

### AICPA votes to exclude new BV glossary from standards

The AICPA Forensics and Valuation Services Executive Committee has voted not to adopt a proposed new glossary of terms into its valuation standards. This is welcome news for valuation practitioners who had concerns about making the new glossary part of the authoritative standards.

The new glossary was issued in exposure draft form with comments due January 31. The document, *International Valuation Glossary–Business Valuation,* is the result of a collaboration of the ASA, AICPA, RICS, TAQEEM, and CBV Institute and represents a massive overhaul of the existing version.[1] It contains many more technical terms and methodologies, some of which have emerged since the current version was published in 2001. The AICPA sought comments on the content of the glossary and whether it should be included in the AICPA's Statement on Standards for Valuation Services (VS Section 100).

In a letter to the *BVWire* editor, Dr. Michael A. Crain (Florida Atlantic University), former chair of the AICPA BV committee, expressed concern that the inclusion of the new glossary in the standards could increase risk for practitioners and pointed out that it may be better to issue the glossary in nonauthoritative form, such as a practice aid.[2] During a BVR "power panel" webinar, leading practitioners agreed that risk could be increased, especially in a litigation context.[3] Some of the new glossary entries include methodologies that are unknown to some practitioners, so opposing counsel could ask the practitioner whether he or she used the methodologies listed. A "no" answer could seriously impact the expert's credibility in the eyes of the court. An attorney who represents accounting professionals in professional liability matters also agreed, telling *BVWire* that the "proposed revised documents increase the potential for professional risk."[4]

The vote not to adopt the proposed new glossary into the AICPA valuation standards was unanimous, according to an announcement from the AICPA FVS committee. The announcement also noted that all feedback on the exposure draft was evaluated and will be shared with the glossary's working group.

### FASB OKs updated goodwill triggering standard for private firms

The Financial Accounting Standards Board has decided to give private companies and not for profits the option to assess at a later point a situation that might trigger a goodwill impairment.[5] This change is designed to address the cost and complexity of having to perform triggering-event evaluations and measure potential impairment in interim periods although they only prepare GAAP financial statements annually. FASB expects to publish the new standard in late March, and entities that exercise this option don't have to monitor for triggering events in between reporting periods. This is part of the FASB's efforts to advise companies on how to account for the impact of the pandemic, and it has delayed implementation of certain rules. Separately, FASB is working on a new standard that will require companies to write down a portion of goodwill each year, instead of doing annual impairment testing.

### Current USPAP extended for one year

The Appraisal Foundation's Appraisal Standards Board (ASB) announced that the current edition of the Uniform Standards of Professional Appraisal Practice (USPAP) will be extended by one year. The 2020-2021 USPAP will now be effective until Dec. 31, 2022. This extension does not impact continuing education

1 aicpa.org/content/dam/aicpa/interestareas/forensicandvaluation/resources/standards/downloadabledocuments/56175896-international-valuation-glossary-business-valuation-dec14-2020.pdf.

2 bvresources.com/articles/bvwire/letter-to-the-editor-proposed-change-to-bv-glossary.

3 bvresources.com/articles/bvwire/bvr-power-panel-comments-on-proposed-bv-glossary.

4 bvresources.com/articles/bvwire/attorney-sees-trouble-with-proposed-new-bv-glossary.

5 fasb.org/cs/ContentServer?c=FASBContent_C&cid=1176176043029&d=&pagename=FASB%2FFASBContent_C%2FActionAlertPage.

requirements. More details on the extension and some FAQs are on the organization's website.[6]

## Methods and Approaches

### New CMS rule that impacts healthcare valuations at risk?

This past December, the Centers for Medicare & Medicaid Services (CMS) released a final rule that modernizes and clarifies the regulations that implemented the Medicare physician self-referral statute (the Stark Law).[7] The new rule, effective Jan. 19, 2021, is designed to make it easier for hospitals and physicians to maintain compliance with the statute in the era of value-based care. The rule impacts healthcare valuations and includes guidance on how to determine whether the compensation being given to physicians is at fair market value.

We've read several articles (see one here) indicating that the new rule may be at risk of delay or replacement due to the GAO's finding of a technical deficiency, i.e., CMS failed a required 60-day notice period for the new Stark regulations.[8] As a result, the articles say President Biden's memo of January 20 announcing a regulatory freeze may impact the new rule, thus raising the possibility that the new administration may revisit and revise the final rule.

Tim Smith (TS Healthcare Consulting LLC) tells *BVWire* that, based on what he has heard within the healthcare community, it is unlikely that the new Stark regs will be changed or delayed, despite the technicalities of the notice period and the regulatory hold. Smith is the co-author of the *BVR/AHLA Guide to Valuing Physician Compensation and Healthcare Service Arrangements.*

Mollie Gelburd, associate director of government affairs at the Medical Group Management Association (MGMA), agrees that it is not likely that the new rule will be delayed or revised. While the GAO finding[9] says that the rule indeed failed the notice period that requires a 60-day delay from the date the rule is published to when it is effective, the Biden administration would have to make an argument that, because of that, the rule did not go into effect on January 19 and thus falls under the regulatory freeze signed one day later. That is unlikely, says Gelburd, for several reasons. "It is unclear whether President Biden has the authority to do that and the rule has bipartisan support," she tells *BVWire.* "Also, the rule has the support of the healthcare provider community which has its hands full with the pandemic, so I don't see President Biden trying to exert authority to have the new rule fall under the freeze memo." Congress could strike down the rule under the Congressional Review Act (CRA), Gelburd explains, but that is also unlikely. "Congress has largely been supportive of the Stark regulations," she points out, "so they are not likely to choose to undo the new rule."

The position of CMS is that the regulations are in effect as scheduled. Smith reached out to CMS, which issued this statement: "The regulations finalized in CMS-1720-F (Medicare Program; Modernizing and Clarifying the Physician Self-Referral Regulations) are effective, except for the revisions to 42 CFR 411.352, which have the delayed effective date set forth in the final rule in order to give physician practices that qualify as 'group practice' time to comply with any changes that may affect their physician compensation models."

Smith and Mark Dietrich (Mark O. Dietrich CPA PC), both of whom gave input to CMS during the development of the rule, conducted a BVR webinar that discussed its impact on healthcare valuation.[10]

### DOL and PFS settle ESOP suit

The DOL recently settled a suit against Professional Fiduciary Services (PFS) related to a 2012 transaction in which PFS served as trustee in an ESOP acquisition of outstanding company stock. Following the playbook, DOL alleged PFS breached its fiduciary duties by causing the ESOP to pay more than fair market value for the shares.

The company was Contractors Register Inc., a New York City-based company that provides construction search engines. According to Bloomberg, the company publishes regional directories and databases for the construction industry. In 2010, the company's shareholders recapitalized most of their equity in the company with long-term, low-interest notes. The company's capital structure was highly leveraged, but the balance sheet showed over $90 million in cash. The remaining shareholder then wanted to sell his interest to employees via an ESOP. The acquisition, which took place in late 2012, left the ESOP with 100% of the company

6 appraisalfoundation.sharefile.com/share/view/sfc53c1a2d64f4151b0c789437aa99cf7.

7 cms.gov/newsroom/press-releases/cms-announces-historic-changes-physician-self-referral-regulations.

8 One example: jdsupra.com/legalnews/new-stark-law-and-aks-final-rules-at-7995680.

9 gao.gov/assets/720/711813.pdf.

10 sub.bvresources.com/bvstore/cd3.asp?pid=CD748.

stock. PFS was engaged as independent trustee. PFS hired an independent appraisal firm and a law firm to act as trustee counsel.

**Familiar complaint:** The DOL's complaint alleged PFS breached its fiduciary obligations to the plan by failing to scrutinize the valuations underlying the transaction and overlooking red flags, such as overly aggressive revenue projections, which produced an inflated valuation of the company's stock. Among other things, the DOL objected to the projected 2.2% compound annual growth rate for 2013 to 2017. The DOL said the appraiser did not explain how the company would achieve this growth rate but simply relied on management projections. Further, projections of capital expenditures and working capital needs were unreasonable. Also, there was no real negotiation over the purchase price.

The seller offered to sell the outstanding shares for $26,770,000. The independent valuator arrived at a value range between $26.2 million and $40.5 million, with a midpoint of $32.9 million (3.4 to 4.1 times average EBITDA). PFS agreed to a price of $26.7 million. The seller provided 100% of the financing in the form of a note from the company. There were no warrants or other claims on equity.

The DOL sued PFS in December 2019. In December 2020, the parties agreed to a settlement in mediation.

**Settlement:** Under the recent settlement, PFS will pay $750,000 to the ESOP in three installments. Also, PFS and its president, John Michael Maier, agreed that Maier would no longer accept engagements to serve as trustee in new ESOP-formation transactions. PFS notes that the settlement does not prevent PFS/Maier from accepting engagements to sell ESOP stock, serving as successor trustee, undertaking stock acquisitions for existing ESOPs, releveraging transactions, and continuing to serve as trustee for existing clients. PFS also agreed not to accept indemnification from CRI or other ESOP clients for breach of fiduciary duties. Under the settlement, PFS and Maier do not admit to any breach of their fiduciary duty to the CRI ESOP.

## Research, Surveys, Data

### New paper on IBOR reform and valuation

For many years, interbank-offered rates (IBORs) have set the benchmark rate for lending on an unsecured basis. By the end of 2021, countries (including the U.S.) plan to phase out IBOR and move to a new benchmark known as alternate reference rates (ARR). The International Valuation Standards Council (IVSC) has issued a "Perspectives Paper–IBOR Transition: A Valuation Guide" that outlines the key challenges that arise for valuation professionals from the termination of IBOR.[11] The paper also summarizes the areas that can contribute to "valuation uncertainty" and thereby increase "valuation risk" in appraisals of financial instruments arising from the transition away from IBOR.

11 ivsc.org/news/article/perspectives-paper-ibor.

### What's New on BVResearch Pro

Every month, BVR adds new content to BVResearch Pro, the largest and most comprehensive library of business valuation content available anywhere. Here are some highlights of what's been added this month:

**Books, Articles, Transcripts**

- *Intellectual Property Valuation Case Law Compendium,* 4th edition. Updated analysis of over 200 legal decisions and a collection of recent articles (book);
- NICE Value! How to Deploy the Non-Marketable Investment Company Evaluation (NICE) Method; William H. Frazier (webinar transcript); and
- Power Panel Live: Expert Answers for Today's Tough BV Questions; Jay Fishman, Jeff Tarbell, Michelle Gallagher, and Kenneth Pia (webinar transcript).

**Legal Research**

- *Precision Kidd Acquisition, LLC v. Pass*, 2020 Pa. Super. Unpub. LEXIS 3103 (damages related to merger);
- *In re Kinser Group LLC*, 2020 Bankr. LEXIS 3533 (bankruptcy; hotel valuation); and
- *Hartman v. BigInch Fabricators & Construction Holding Co., Inc. (Hartman II)*, Indiana Supreme Court, Case No. 20S-PL-618 (judicial dissolution; discounts).

This new content joins almost 20,000 other articles, books, legal digests, webinar transcripts, white papers, and more from the world's foremost thought leaders in business valuation. Not a subscriber? Go to bvresources.com/products/bvresearch for details.

### 2020 EBITDA multiples rebound, per DealStats

In 2Q20, EBITDA multiples (median selling price/EBITDA) across all industries dropped to 3.7x as deal activity almost came to a halt, according to BVR's *DealStats Value Index (DVI)* report for 1Q 2021.[12] But the multiples rebounded by the second half of 2020, to 4.7x in the third quarter and 4.4x in the fourth quarter, returning to levels near historical norms. "In doing so, this continued the trend of the median EBITDA multiple reporting at its highest level during the second half of the year as seen from 2015 to 2018 and in 2020," the report says. As small businesses still navigate through the COVID-19 pandemic and a new administration implements its economic policies, DealStats will continue to monitor the trends in the EBITDA multiple.

### LEI up but at slowing pace, reports BVR's *EOU*

In December 2020, the U.S. Leading Economic Index (LEI) improved 0.3%, to 109.5 points, which follows an increase of 0.7% in November, reports the *Economic Outlook Update (EOU)* published by Business Valuation Resources (BVR).[13] The report noted that the LEI's slowing pace of increase in December suggests that U.S. economic growth continues to moderate in the first quarter of 2021. The report further states that, while the resurgence of COVID-19 and weak labor markets remain barriers to growth, the Conference Board expects the economy to expand by at least 2.0% (annual rate) in Q1 and then gain momentum throughout the year. The 54-page December 2020 *Economic Outlook Update* contains expansive research from leading authoritative resources, which you can use in your valuation reports as long as you give proper attribution.

## Cost of Capital

### Damodaran updates cost of capital data

Professor Aswath Damodaran (New York University Stern School of Business) has started his annual posting of data updates on his website that include risk-free rates, equity risk premiums, corporate default spreads, corporate tax rates, country risk premiums, and other data—all of which are free. He does a series of posts on his blog based on these new data. The first post takes a look back at 2020 and explains the background of his annual data analysis.[14] A recent survey of valuation analysts found that 13% use Damodaran's data for developing an estimate of cost of equity.[15]

12 bvresources.com/dealstats-value-index.

13 bvresources.com/eou.

14 aswathdamodaran.blogspot.com/2021/01/data-update-1-for-2021-data-look-back.html.

## Miscellany

### Agenda available for Energy Valuation Conf. May 12

A post-COVID-19 outlook for the energy sector, downstream refineries, upstream reserves, oil and gas valuations, and complex infrastructure assets are some of the topics on the agenda for the Houston Chapter of the American Society of Appraisers (ASA) Energy Valuation Conference on May 12.[16] BVR will present a live webcast of the conference, now in its 11th year, which will feature nationally recognized speakers who are profession leaders. Early-bird pricing is available through March 31.

15 bvresources.com/articles/bvwire/hitchner-poll-reveals-coec-sources-of-choice.

16 bvresources.com/events/asa-energy-valuation-conference.

# Global *BVU* News and Trends

**Business valuation news from a global perspective.**

## Regulators, Standard-Setters, VPOs

### IVSC seeks candidates for financial instruments board

The International Valuation Standards Council (IVSC) is looking to recruit up to three new members for its Financial Instruments Standard Board.[1] The board, formed in 2018, guides the development of international valuation standards for financial instruments, and recently issued an exposure draft (comments due April 19).[2] Individuals appointed to serve on any IVSC board serve for a term of three years. Applications are due by March 31.

### Expect further definition of 'business interests' in next year's IVS modifications

The International Valuation Standards (IVS) are once again under agenda consultation, but, like the current 2020 version, some of the most extensive proposed revisions come within IVS 200, the section dedicated to valuing businesses and business interests. This includes updates to professional governance and particularly in clarification of the definition of business interests. A red-lined draft of the proposed additions to IVS is available, and the IVS 200 Businesses and Business Interests changes can be found on page 29.[3]

### Rescheduled ICAEW Valuation Conference announced

Registration is now open for the ICAEW Valuation Conference that is back on the calendar after it was postponed last fall.[4] The new day-long virtual program is scheduled for May 20 beginning at 8:55 BT. Those who registered for the 2020 program should have received their new registration, along with a refund. The program begins with Professor Pablo Fernandez discussing his recent article 'Valuation, Common Sense and Common Errors.' Among his topics are:

- What is a valuation?
- Where do discounted cash flow valuations come from?
- A closer look at assumptions in valuation models;
- Facts, opinions, and theories;
- Problems with calculated betas;
- Errors due to forgetting what are we doing;
- Errors due to 'not remembering the definition of WACC,' the most common error using WACC;
- Errors due to 'following a recipe without thinking'; and
- How to correct common errors?

Fernandez is followed by Ian Cooper's discussion of valuation anomalies such as the small-firm effect, liquidity, the low beta anomaly, profitability, and sentiment. Afternoon sessions include Andrew Strickland's session on cost of capital for family companies. A further highlight of the event will be the unusual opportunity to hear directly from HMRC's Shares and Asset Valuation (SAV) section assistant director, Steve Thomas. SAV offered well-attended meetings for years for the valuation profession, but they've been postponed since 2018.

## Books, Research Papers, Studies, Data

### Guidance fills in the gaps in IFRS regarding bitcoin

This has been quite a time for bitcoin and the other cryptocurrencies. Elon Musk bought and then complained that the assets were overpriced. And, for the first time, over 1 million individual purchasers traded bitcoin on one of the more popular wallets. Another institutional investing consultant suggested that all corporate portfolios should contain 1% cryptocurrency.

While very few businesses consider bitcoin to be a significant part of their cash management or treasury strategy (and no matter what we individually think about this investment trend), more appraisers are likely to find themselves valuing these assets. Accounting rules don't really exist, though IFRS suggests using the intangible asset rules. There are few market

1 ivsc.org/files/file/view/id/1914.
2 bvresources.com/articles/bvwire/global-bv-news-ivsc-issues-exposure-draft-on-financial-instruments.
3 ivsc.org/files/file/view/id/1904.
4 events.icaew.com/pd/19161/valuation-conference-2021?txt=valuation&range=10%2F05%2F2021&returncom=productlist&source=search.

comparables, or business valuation standards or guidelines, to rely on.

Once again, *The Footnotes Analyst* offers thoughtful guidance for business valuers in their Feb. 15, 2021, edition.[5] How should experts analyse companies that hold bitcoin and other cryptocurrencies? In this regard, the accountants and the business valuation profession are likely in some agreement, since both recognise that a cryptocurrency is not cash and that it can't be treated on the balance sheet—or in valuation analyses—as just another foreign currency. Here's how *The Footnotes Analyst* succinctly defines the problems for analysts:

> [C]ryptocurrencies are not regarded as a currency for accounting purposes. This is because they are not considered legal tender, are not issued or backed by a government or state and are not directly related to setting prices for goods and services. Nor are they cash equivalent, which must have 'insignificant risk of changes in value.' Bitcoin moved between 33,000 and 59,000 USD since the beginning of 2021.

What's the conclusion? Since no other asset class works using existing IFRS, the authors conclude that valuers view cryptocurrencies as indefinite life intangible fixed assets—or, in exceptional cases, as inventory. 'Intangible assets are defined as "identifiable non-monetary assets without physical substance" (IAS 38). This broad definition seems to encompass cryptocurrencies and, hence, in the absence of specific rules, this appears to be the most logical classification,' they conclude.

The analysis also includes the MicroStrategy 'fair value' case study on valuing impairments and gains (under IFRS, not US GAAP) from bitcoin. MicroStrategy is one of the few listed companies that has stated crypto-investments will be a key part of their treasury, and it appears that IASB is likely to add guidance soon.

### Cost of capital parameters in Europe as of Dec. 31, 2020

ValueTrust has released a seventh edition of its "European Capital Market Study"[6] that serves as a comprehensive compilation of capital market parameters such as cost of capital and implied as well as historical risk premiums for European countries.[7] The study also includes trading multiples and total shareholder returns across a wide range of industries. Here are a few key findings:

- The risk-free rate declined from 0.21% as of Dec. 31, 2019, to -0.14% as of Dec. 31, 2020;
- After reaching the highest market-value weighted mean, at 9.0% as of Dec. 31, 2018, the implied European market return decreased to 7.0% as of Dec. 31, 2020; and
- The technology sector shows the highest multiples on average; the financial sector continues to have the least expensive valuation level of all sectors.

### New online guide to valuation standards around the world

The folks at Valuology have compiled profiles of the valuation regulatory infrastructure in over 100 jurisdictions around the world.[8] The profiles include such information as legal and regulatory requirements for valuations, the use of International Valuation Standards (IVS), the existence of local valuation professional organizations (VPOs), whether the VPOs issue their own standards, and more.

## Country Views

### India: Kohli scores again with top celebrity brand value in India

Virat Kohli, captain of the India national cricket team, has topped the powerful celebrity brand list of Duff & Phelps for the fourth year in a row, according to its Celebrity Brand Valuation Study 2020: "Embracing the New Normal."[9] The report is a deep analysis of how endorsements affect the brand value of celebrities alongside other factors such as age, fees charged per endorsement, social media presence, and the like. It also examines the impact of the pandemic on both brand value rankings and the celebrity endorsement space. Kohli has a brand valuation of $237.7 million followed by actor Akshay Kumar, at $118.9 million.

5 footnotesanalyst.com/bitcoin-the-financial-reporting-challenge-for-investors.

6 value-trust.com/wp-content/uploads/2021/01/ValueTrust-European-Capital-Market-Study_December-2020.pdf.

7 Ibid.

8 valuology.org/standards-worldwide.

9 duffandphelps.com/insights/publications/valuation/celebrity-brand-valuation-report-2020.

# *BVLAW* CASE UPDATE

*Featured Case*

## In COVID-19 Business Interruption Case, Court Finds Plaintiffs Did Not Argue Physical Loss and Virus Exemption Applies

***Real Hosp., LLC v. Travelers Cas. Ins. Co. of Am.*, 2020 U.S. Dist. LEXIS 208599; F. Supp. 3d __; 2020 WL 6503405 (Nov. 4, 2020)**

**Summary:**

In this business interruption case resulting from mandatory shutdowns to control COVID-19, the court granted a motion by the defendant insurance company to dismiss claims of plaintiffs; plaintiffs did not argue that they sustained a physical loss and coverage would have been denied nevertheless by the virus exemption.

**Case Digest:**

COVID-19-related damages cases are making their way through state and federal courts. Plaintiffs typically are businesses that have suffered economic losses because of various mandatory shutdowns. They file claims with their insurance agency, which frequently denies coverage for business interruption losses. However, more often than not, courts have sided with the defendant insurance company and dismissed the plaintiff's case or ruled against the business owner. In the instant case, the court granted a motion by the defendant insurance company to dismiss claims of plaintiffs; plaintiffs did not argue that they sustained a physical loss and coverage would have been denied nevertheless by the virus exemption.

**Background:**

Plaintiff is a corporation doing business in Hattiesburg, Miss. Plaintiff's business is a family-style restaurant. Travelers issued to plaintiff an "all risk" commercial property insurance policy, which covers loss or damage to the covered premises resulting from all risks other than those expressly excluded. There is a business owners coverage part of the policy.

**Relevant Policy Provisions:**

The policy has a section titled "Businessowners Property Coverage Special Form." "This Special Form contains the following provisions, some of which Plaintiff includes in the Complaint, others of which the Court finds essential to the analysis of Plaintiff's ability to state a claim." The policy covers a building, building personal property, and business income.

The key provision to the business income loss provisions states that "[w]e will pay for the actual loss of Business Income you sustain due to the necessary 'suspension' of your 'operations' during the 'period of restoration.' The 'suspension' must be caused by direct physical loss of or damage to property at the described premises. The loss or damage must be caused by or result from a Covered Cause of Loss."

Further, the policy contains an endorsement titled "Exclusion of Loss Due to Virus or Bacteria," which reads, in relevant part: "We will not pay for loss or damage caused by or resulting from any virus, bacterium or other microorganism that induces or is capable of inducing physical distress, illness, or disease."

**Motion to Dismiss:**

Defendant moves to dismiss the complaints of the plaintiff since plaintiff failed to state a claim for coverage under the business income/extra expense provision. Plaintiff has not alleged any facts showing a physical loss of property or any physical damage to property that would trigger the business income/extra expense coverage.

Plaintiff's claim would also be expressly excluded by the "Virus Exclusion."

In response, plaintiff first asks that the court certify to the Mississippi Supreme Court the question of what the business income coverage provision means. Plaintiff further argues that the virus exclusion does not clearly and unambiguously exclude coverage.

**Legal Standard:**

This case also applies Federal Rule 12(b)(6), which requires that "a complaint must contain sufficient factual matter, accepted as true, to state a claim to relief that is plausible on its face." As is normal, the court applies the law of the forum state, which in this case is Mississippi.

**Analysis:**

Under Mississippi law, "when the words of an insurance policy are plain and unambiguous, the court will afford them their plain, ordinary meaning and will apply them as written." Plaintiff is asking for a declaratory judgment that business income and extra expense coverage applies as alleged in the complaint. "Travelers moves to dismiss on the grounds that the Complaint does not allege a physical loss of property or any physical damage to property as is required for coverage under the Business Income/Extra Expense coverage provision." Plaintiff argues that direct physical loss does not require tangible damage or alteration to property. The court allows that, in order for business income coverage to apply, the property in question must be either lost or damaged. "[R]eading the Policy as a whole, the Court finds that Plaintiff's Complaint fails to state a claim because it does not allege that any insured property was damaged or that Plaintiff was permanently dispossessed of any insured property … [and] Plaintiff's contention that 'loss of property' reasonably includes loss of usability is not sustainable."

The court also decides that the virus exclusion "clearly and unequivocally" exempts any loss or damage from a virus. The court thus grants the motion to dismiss the plaintiff's claims. ◆

***BVLaw*** **subscribers can access digests of court decisions and the original court opinions, and new cases are added every month. This table provides an overview of the latest case discussions added to the *BVLaw* platform. To read the complete digest of the listed cases, subscribe to *BVLaw* by visiting bvresources.com/bvlaw.**

## Latest Cases Added to *BVLaw*

| Case Name/ Full Citation | Experts | Case Type | State/ Jurisdiction | Digest Summary |
|---|---|---|---|---|
| *Real Hosp., LLC v. Travelers Cas. Ins. Co. of Am.*<br>2020 U.S. Dist. LEXIS 208599; F. Supp. 3d ___; 2020 WL 6503405 (Nov. 4, 2020) | N/A | Economic Damages & Lost Profits | Federal/Southern District of Mississippi, Eastern Division | In this business interruption case resulting from mandatory shutdowns to control COVID-19, the court granted a motion by the defendant insurance company to dismiss claims of plaintiffs; plaintiffs did not argue that they sustained a physical loss, and coverage would have been denied nevertheless by the virus exemption. |
| *AFM Mattress Co. v. Motorists Commercial Mutual Insurance Company*<br>2020 U.S. Dist. LEXIS 221121 (Nov. 25, 2020) | N/A | Economic Damages & Lost Profits | Federal/Northern District of Illinois, Eastern Division | In this business interruption case resulting from mandatory shutdowns to control COVID-19, the court grants a motion to dismiss claims of plaintiff. While plaintiff claims losses due to COVID-19, it does not sufficiently move the court to consider the virus exclusion of the policy inapplicable. A motion for a sur-response to espouse an alternative theory was also denied but without prejudice. |
| *Studio 417 v. Cincinnati Ins. Co.*<br>2020 U.S. Dist. LEXIS 147600 (Aug. 12, 2020) | N/A | Economic Damages & Lost Profits | Federal/Western District of Missouri, Southern Division | In this business interruption case resulting from mandatory shutdowns to control COVID-19, the court declined to grant a motion to dismiss claims of plaintiffs; plaintiffs, inter alia, adequately allege that they suffered a physical loss due to COVID-19. |
| *Graspa Consulting v. United Nat'l Ins. Co.*<br>2020 U.S. Dist. LEXIS 215976 (Nov. 17, 2020) | N/A | Economic Damages & Lost Profits | Federal/Southern District, Florida | In this business interruption case resulting from mandatory shutdowns to control COVID-19, the court dismisses plaintiff's (a restaurant chain owner/operator) claims against insurance company; plaintiffs did not incur (nor did they assert) physical damages to premises as required by the terms of the insurance policy. |
| *S. Fla. Ent Assocs. v. Hartford Fire Ins. Co.*<br>2020 U.S. Dist. LEXIS 213319 (Nov. 13, 2020) | N/A | Economic Damages & Lost Profits | Federal/Southern District, Florida | In this business interruption case resulting from mandatory shutdowns to control COVID-19, the court grants a motion to dismiss claims of the plaintiff. While the plaintiff claims losses due to COVID-19 shutdowns, the plaintiff fails to allege any actual harm to the insured property. |

# BVR TRAINING EVENTS

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**Power Panel: Live Expert Answers for Today's Tough BV Questions**
April 6, 10:00 a.m.-11:40 a.m. PT/1:00 p.m.-2:40 p.m. ET
*Featuring: Jay Fishman (Financial Research Associates)*

**Valuing Shareholder Cash Flows**
April 21, 10:00 a.m.-11:40 a.m. PT/1:00 p.m.-2:40 p.m. ET
*Featuring: Travis Harms (Mercer Capital) and Z. Christopher Mercer (Mercer Capital)*

**Valuing Telehealth Services**
April 27, 10:00 a.m.-11:40 a.m. PT/1:00 p.m.-2:40 p.m. ET
*Featuring: Todd Zigrang (Health Capital Consultants) and Jessica Bailey-Wheaton (Health Capital Consultants)*

**Houston's ASA Energy Valuation Conference: A BVR Live Webcast**
May 12, 6:15 a.m. PT-3:15 p.m. PT/9:15 a.m. ET-6:15 p.m. ET
*Featuring an expert panel*

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# CALENDAR

**AICPA Fair Value Measurements Workshop**
April 22-23
www.aicpa.org

**AICPA & CIMA CFO Conference**
May 5-7
www.aicpa.org

**74th CFA Institute Annual Conference**
May 18-20
Toronto, Ontario
www.cfainstitute.org

**2021 Annual IBBA Conference**
May 21-22
Woodlands, TX
www.ibba.org

**ESOP 44th National Conference (Virtual and Live Conference)**
June 21-23
Washington, DC
www.esopassociation.org

**2021 Business Valuation & Financial Litigation Hybrid & Virtual Super Conference**
June 21-25
Park City, UT
www.nacva.com

**2021 ASA International Conference (Virtual and Live Conference)**
October 24-26
Las Vegas, NV
www.appraisers.org

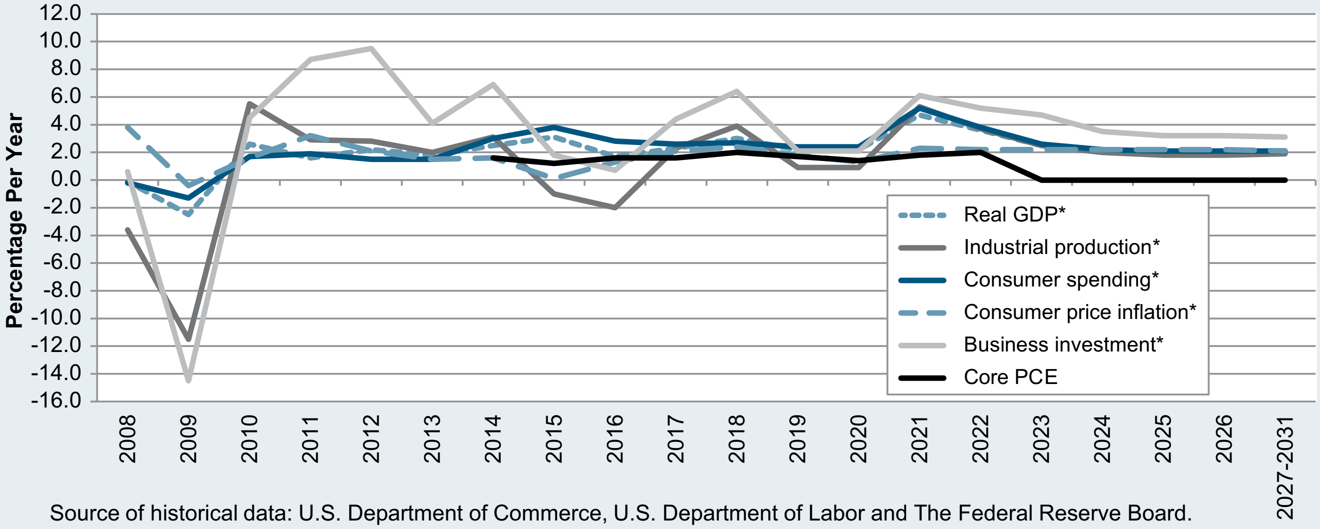
**AICPA & CIMA Forensic & Valuation Services Conference (Virtual and Live Conference)**
November 8-10
Las Vegas, NV
www.aicpa.org

**For an all-inclusive list of valuation-related seminars and conferences, BV education classes and credentialing programs, and all BVR events, go to bvresources.com/bvcalendar.**

# BUSINESS VALUATION DATA SPOTLIGHT

## Economic Outlook for the Month

Key Economic Variables Actual 2008-2020 and Forecast 2021-2031




Source of historical data: U.S. Department of Commerce, U.S. Department of Labor and The Federal Reserve Board.
Source of forecasts: Consensus Forecasts.
*Numbers are based on percent change from preceding period. Consumer price inflation information is annual averages.

**Quarterly Forecasts 1Q 2021-3Q 2021 and Annual Forecast 2021-2022**

| | Quarterly | | | Annual | | | |
|---|---|---|---|---|---|---|---|
| | 1Q 2021 | 2Q 2021 | 3Q 2021 | 2021 | *(prior forecast)* | 2022 | *(prior forecast)* |
| Real GDP* | 2.7 | 6.3 | 5.9 | 4.7 | *4.4* | 3.6 | *3.4* |
| Consumer spending* | 2.6 | 7.1 | 6.6 | 5.2 | *5.0* | 3.8 | *3.5* |
| Business investment* | 5.6 | 4.8 | 6.0 | 6.1 | *4.6* | 5.2 | *5.0* |
| Consumer price inflation* | 2.6 | 1.9 | 2.2 | 2.3 | *2.1* | 2.2 | *2.2* |
| Real disposable personal income* | 25.1 | -6.3 | -5.8 | 1.3 | *0.4* | -0.1 | *0.3* |
| Unemployment rate | 6.4 | 6.1 | 5.7 | 5.9 | *6.0* | 4.7 | *4.8* |
| Industrial production* | 4.5 | 5.3 | 4.9 | 5.5 | *5.2* | 3.7 | *3.6* |

Source of forecasts: *Consensus Forecasts - USA*, February 2021.

Notes: Quarterly figures are percent change from prior quarter, at seasonally adjusted annual rates (except unemployment which is the average for that period).

Annual rates are percent change from preceding period (except unemployment, which is the average for that period).

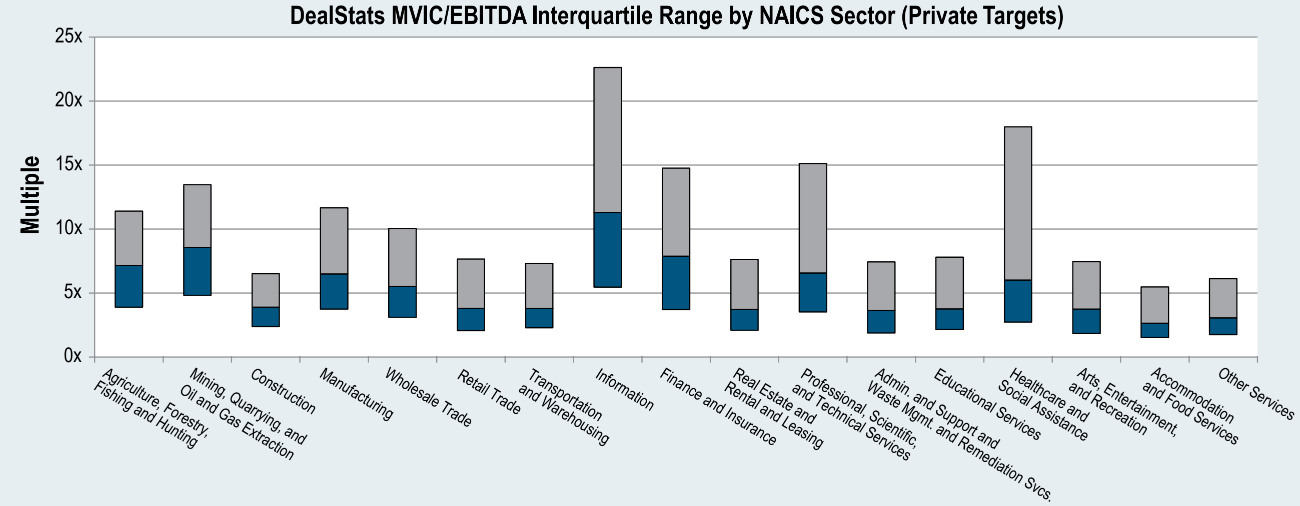
Every month, Consensus Economics surveys a panel of 30 prominent United States economic and financial forecasters for their predictions on a range of variables including future growth, inflation, current account and budget balances, and interest rates.

This section is an excerpt from BVR's *Economic Outlook Update* (*EOU*).[1] The *EOU,* a convenient and cost-effective resource, provides a review of the state of the U.S. economy and forecast for the future. Leading experts in the BV profession rely on the *EOU* as the basis for the current economic conditions and forecast portions of their valuation reports. ◆

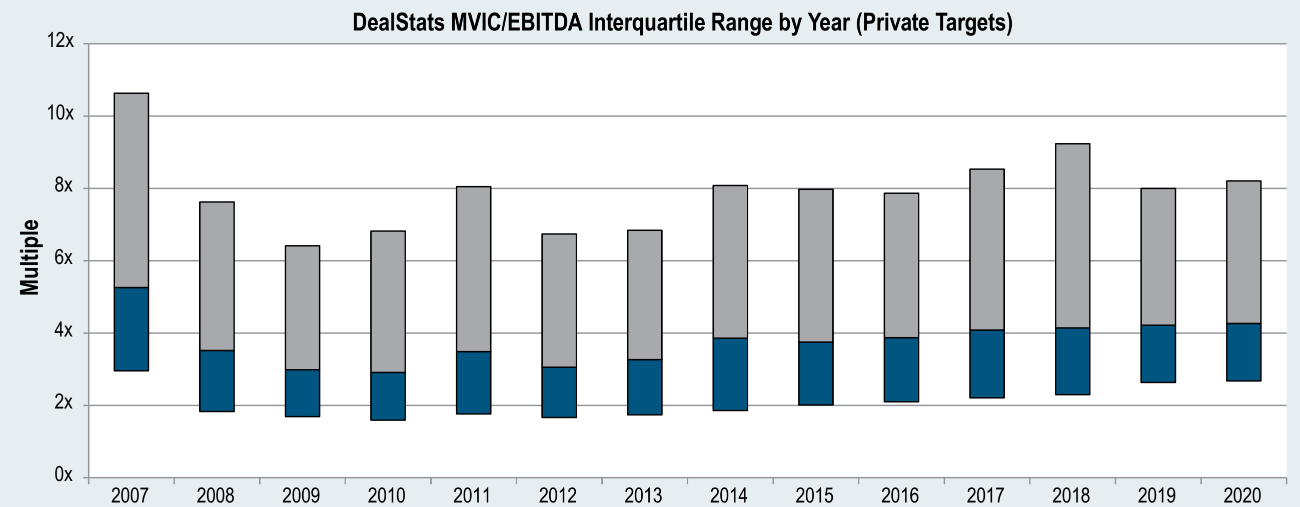
1 The *Economic Outlook Update* is published monthly and quarterly by Business Valuation Resources, LLC (BVR). Visit bvresources.com/EOU or call 503-479-8200, ext. 2.

DealStats

# MVIC/EBITDA Trends



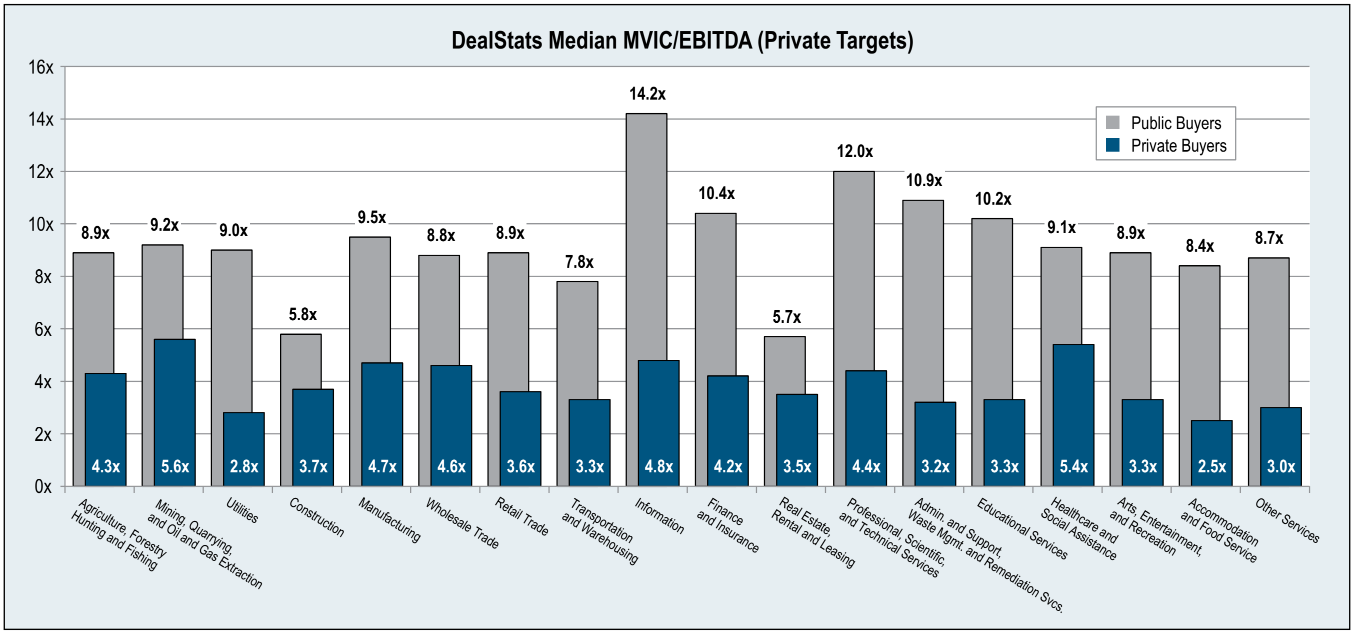

Note: The interquartile range describes the middle 50% of observations. The top of the grey rectangle indicates the 75th percentile, the bottom of the blue rectangle indicates the 25th percentile. The line where the two rectangles meet represents the median. If the interquartile range is large, it means that the middle 50% of observations are spaced wide apart, and, if the interquartile range is narrow, it means the middle 50% of observations are spaced close together.




The first two graphs display the interquartile range of the MVIC/EBITDA multiple by major NAICS sector and by year from the DealStats (formerly Pratt's Stats) database for private targets.[1] For the period analyzed, the information sector had the greatest median MVIC/EBITDA multiple. It appears that the accommodation and food service sector had the least dispersion between the first and third quartiles (25th percentile and 75th percentile), while the healthcare and social assistance sector had the greatest dispersion. The accommodation and food service sector had the lowest median MVIC/EBITDA multiple. When reviewing the data by year, the median MVIC/EBITDA was the highest in 2007, at slightly more than 5.0. Since then, the median MVIC/EBITDA multiple has consistently been under 4.0 and often close to 3.0. It appears that 2007 had the most dispersion in the MVIC/EBITDA interquartile range but has been relatively consistent in recent years. The graph on the next page compares the median MVIC/EBITDA multiples paid by private acquirers to the multiples paid by public acquirers. In each of the 18 industry sectors, public buyers paid higher multiples than private buyers. The greatest difference in multiples between private and public buyers occurred in the information sector.

1 Market value of invested capital (MVIC) is the term used for selling price. In addition to showing the median valuation multiple by sector and year, the interquartile range provides a measure of dispersion. DealStats is available from Business Valuation Resources (BVR). Visit bvresources.com/dealstats, or call 503-479-8200, ext. 2.

DealStats is a private- and public-company transaction database, which provides financial details on over 40,200 acquired businesses. DealStats is used as a comparable transaction data source for sold businesses across all industry sectors. To learn more, visit bvresources.com/dealstats. ◆




# ktMINE Royalty Rate Data


This graph displays the interquartile ranges for royalty rates as a percentage of net sales for all industries between 2006 and 2017 from the ktMINE: Royalty Rate Comparables & Full Text Licensing Agreements Database. As the graph shows, the median royalty rate was between 4.0% and 8.0% for the 12-year period analyzed and the interquartile range was between 6.00 and 14.97 percentage points. While specific comparables would be needed in a valuation, this graph is a useful benchmark to display median royalty rates. More data, as well as industry-specific analysis, can be found in the *BVR/ktMINE Benchmarking Royalty Rates Guide*, 2017-2018 global edition, available at bvresources.com/publications or in the ktMINE database at bvresources.com/ktmine. ◆

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# April 2021 Cost of Capital Center

## General Monthly Cost of Capital Data

| | |
|---|---|
| **Treasury yields**[1] | |
| 30-day: 0.03% 5-year: 0.71% 20-year: 2.11% | |
| **Prime lending rate:**[1] | 3.25% |
| **Dow Jones 20-bond yield:**[2] | 2.12% |
| **Barron's intermediate-grade bonds:**[2] | 2.68% |
| **Dow Jones Industrials P/E ratios:**[2] (Represents median figures) | |
| On current earnings: | 33.7 |
| Forward 12 month operating est.: | 20.7 |
| **High yield estimate:**[3] | |
| Mean: 5.5% Median: 6.0% | |
| **Long-term inflation estimate:**[4] | 2.20% |
| **1H 2021 rate of GDP growth:**[5] | 2.90% |
| **2H 2021 rate of GDP growth:**[5] | 3.70% |

## BVR's Private Company Cost of Capital Index[6]

| Company Revenue ($thousands) | Cost of Capital |
|---|---|
| 1,000 | 18.9% |
| 5,000 | 17.3% |
| 10,000 | 15.6% |
| 15,000 | 14.8% |

## BVR's Cost of Capital Professional[7]

| | CRSP Equity Risk Premium | |
|---|---|---|
| **Time Period** | **Historical ERP (10Y T-Bond)** | **Historical ERP (20Y T-Bond)** |
| 1928-2019 | 6.55% | 5.91% |
| 1950-2019 | 6.75% | 6.13% |
| 1960-2019 | 4.50% | 3.82% |
| 1970-2019 | 4.11% | 3.12% |
| 1928-2018 | 6.39% | 5.80% |
| 1950-2018 | 6.53% | 5.95% |
| 1960-2018 | 4.20% | 3.58% |
| 1970-2018 | 3.73% | 2.82% |

1 Source: The Federal Reserve Board as reported by the BVR Risk-Free Rate Tool, located at bvresources.com/riskfreerates.asp, March 1, 2021.

2 Barron's, Feb. 22, 2021. Forward 12 months as of March 3, 2021.

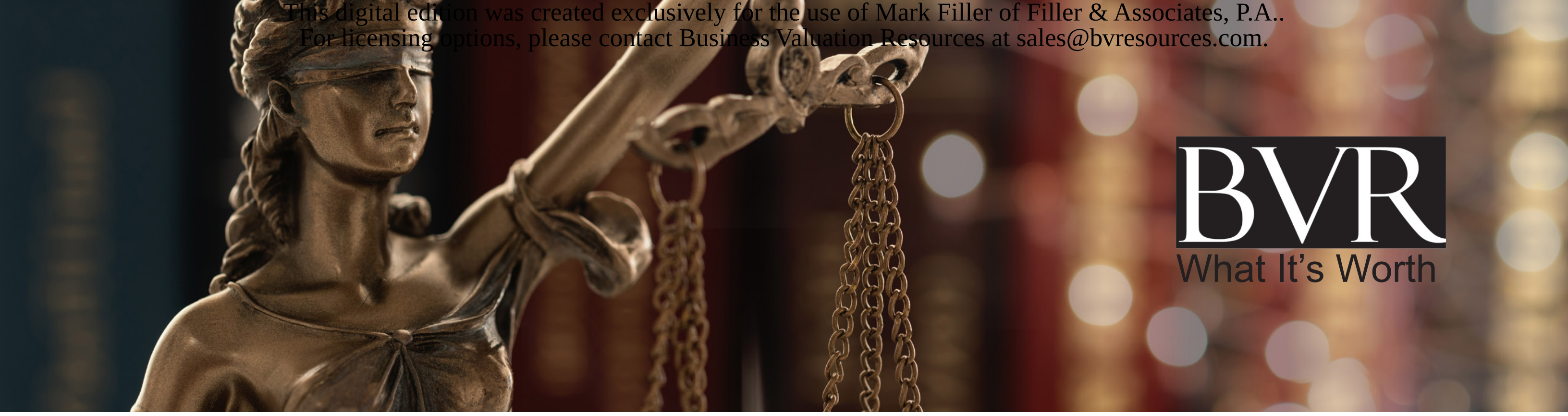
3 Finra.org, March 1, 2021.

4 Aruoba Term Structure of Inflation Expectations/Federal Reserve Bank of Philadelphia Forecasts for the average annualized rate of inflation over the next 10 years, Feb. 26, 2021.

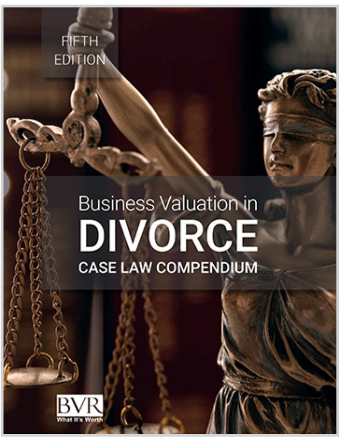
5 GDP Forecast, Federal Reserve Bank of Philadelphia, Livingston Survey, Dec. 18, 2020.

6 After-tax cost of capital (calibrated for 35% tax rate and mid-period convention) for average/typical risk company. For use on unlevered, after-tax expected free cash flows. Based on DealStats data and Dohmeyer, Burkert, Butler and Tatum's Implied Private Company Pricing Line (IPCPL). Numbers are provided by the IPCPL developers as of Oct. 4, 2018. See the IPCPL page at bvresources.com/ipcpl.

7 These data are sourced from BVR's Cost of Capital Professional online platform, which offers equity risk premia, size premia, and risk-free rates and allows you to compute cost of equity and WACC estimates. This powerful resource provides a simple and transparent way to estimate cost of capital. You will always see the components of your cost of capital, how the figures were calculated, and the citations of all sources used—everything you need to support your work. To learn more, visit bvresources.com/ccprofessional.




# The most current analysis on how courts throughout the U.S. view business valuation methods




The 5th edition of BVR's Business Valuation in Divorce Case Law Compendium is the one reference that puts key insights and case law summaries in one place. Every divorce professional can stay ahead of the game with this indispensable resource. The new compendium includes an updated collection of legal digests and a timely introduction by Executive Legal Editor, Sylvia Golden, Esq.

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