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What's Inside

AICPA®

The Application of Regression Analysis to the Direct Market Data Method

*By James A. DiGabriele, D.P.S., CPA/ABV, CFE, CFSA, DABFA, Cr.FA, CVA, and
Mark G. Filler, CPA/ABV, CBA, AM, CVA*

What is regression analysis, and where have you seen it before?

Technically speaking, curve fitting, also termed regression analysis or regression, is a generic term for all methods of quantifying the relationship between two groups of variables by constructing a model that fits the data. The model may then be used either to merely describe the relationship between the two groups of variables or to predict new values.

The two groups of variables involved in regression are usually denoted as x and y, and the purpose of regression is to build a model $y = f(x)$. Such a model tries to explain or predict the variations in the y-variable, or dependent variable, from the variations in the x-variable, or independent variable. The link between x and y is achieved by applying the model to a set of data that includes both x- and y-values; for example, an economist may collect data in order to evaluate price increases based on either demand or changes in the money supply, or changes in inflation or interest rates.

In business valuation (BV), for example, it is commonly known that, *ceteris paribus*, value is a function of cash flow. Therefore, various databases such as Bizcomps, Pratt's Stats, Done Deals, and IBA, have collected data sets from market transactions that include for each transaction, among other items of interest, selling price and Seller's Discretionary Earnings (SDE). Regression is then used to relate selling price, the y-variable, to SDE, the x-variable. Once you have built a regression model, you can predict the selling price for your subject company, using the known SDEs from the database as the predictors.

Although regression is a technique that has not yet been accorded widespread use in BV, there are some valuation applications that are familiar. For instance, your personal residence is appraised for assessment purposes using a form of regression known as multiple regression, wherein the selling prices of all homes in the municipality over a given time period are regressed against such x-variables as square footage, age, number of bathrooms, lot size, and the like. Plugging the x-variables of your home into the model produces assessed value.

In BV, the pioneering work of Jay Abrams relating equity value and the subject company's discount rate to Ibbotson's 10 deciles of stock market returns was accomplished using regression, as was a similar study carried out by Grabowski and King using, instead of 10 deciles, 25 percentiles to determine the discount rate based on various proxies for size. Grabowski and King went on to regress the equity risk premium against annual average operating margin, the coefficient of variation of annual operating margin, and the coefficient of variation of annual returns to shareholders' equity. Each of these examples provided practitioners with the model's output, the x-variable coefficients that, when multiplied by the appropriate x-variable, produced the subject company's value or discount rate or equity risk premium, with no additional knowledge or work. However, all of these BV regression applications are confined to the income approach.

In this series of articles, the authors will attempt to introduce and encourage the use of regression analysis as it applies in general to the market approach, and more specifically to the direct market data method using the Bizcomps database.

A Brief Introduction to Simple Linear Regression

If you plot two variables against each other in a scatterplot, or scatter graph, the values usually do not fall in a perfectly straight line. If you perform a linear regression analysis, you attempt to find the line that best estimates the relationship between the two variables (the y-, or dependent, variable, and the x-, or independent, variable). The line you find is called the fitted regression line, and the equation that specifies the line is called the regression equation.

If the data in a scatterplot fall approximately in a straight line, you can use linear regression to find an equation for the regression line drawn over the data. Usually, you will not be able to fit the data perfectly, so some points will lie above and some below the fitted regression line.

The regression line that Excel fits will have an equation of the form $y = a + bx$. Once again, y is the dependent variable, the one you are trying to predict, and x is the independent, or predictor, variable, the one that is doing the predicting. Finally, a and b are called coefficients. Figure 1 on page 3 shows a line with $a = 10$ and $b = 2$. The short vertical line segments represent the errors, also called residuals, which are gaps between the line and the points. The residuals are the differences between the observed dependent values and the predicted values. Because a is the point at which the line intercepts the vertical axis, a is sometimes called the intercept or constant term in the model. Because b shows the steepness of the line, b is called the slope. The slope gives the ratio, known as rise over run, between the vertical change and the horizontal change along the line. In figure 1, y increases from 10 to 30 when x increases from 0 to 10, so the slope is b = vertical change/horizontal change = $(30-10)/(10-0) = 2$.

Suppose that x is years on the job and y is salary. Then the y-intercept ($x = 0$) is the salary for a person with zero years' experience, the starting salary. The slope is the change in salary per year of service. A person with a salary above the line would have a positive residual, and a person with a salary below the line would have a negative residual.
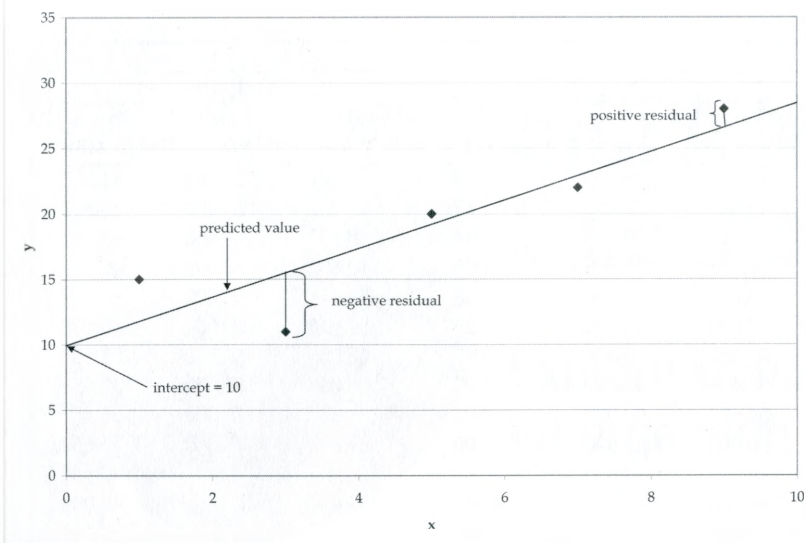
If the line trends downward so that y decreases when x increases, then the slope is negative. For example, if x is age, and y is the price of used cars, then the slope gives the drop in price per year of age. In this example, the intercept is the price when new, and the residuals represent the difference between the actual price and the predicted price. All other things being equal, if the straight line is the correct model, a positive residual means a car is selling for more than it should, and a negative residual means a car is selling for less than it should (that is, it's a bargain).

I Get Good Results with Average or Median Ratios — Why Should I Switch to Regression Analysis?

There are multiple reasons for using regression analysis, but, as they say, a picture is worth a thousand words. But first, let us rely on basic intuition. Figure 2 on page 4 is a schedule showing a truncated set of market transactions, along with three sets of predicted values derived from the average Price/SDE ratio, the median Price/SDE ratio, and a regression equation. Included in the schedule are various metrics, including means that were derived by using Excel's AVERAGE function; standard deviations (the average amount of dispersions around the mean) derived with STDEV; and the median, derived with MEDIAN. Also shown is the COV, or coefficient of variation, which is obtained by dividing the standard deviation by the mean, and which places all the outputs on a standardized footing for comparative purposes. The COD, or coefficient of dispersion is the average of the absolute deviations (AAD) from the median divided by the median. This too is used for comparative purposes. Although the standard deviation measures the dispersion about the average of a single column of numbers, root mean squared error (RMSE), or the standard error, measures the size of the average deviation of an observed value from the regression line; or the average deviation between two columns of numbers, the observed and the predicted. The Excel formula for RMSE for the average and median outputs is:

=SQRT(SUMXMY2(B4:B13,H4:H13)/(COUNT (B4:B13)-1)),

Figure 1

Figure 1

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where B4:B13 are the observed values of y for this data set, H4:H13 are the predicted values of y for this data set, and 1 represents a loss of one degree of freedom. For regression, the function is STEYX, with the x-variables used in conjunction with the observed y-variables. The last two items to be addressed are the Excel functions for computing the slope and the intercept, which are, surprise, SLOPE and INTERCEPT.

It is obvious from the schedule and the demonstrated metrics, namely, COV, COD, and RMSE, that when it comes to reducing dispersion and fitting the data, the average ratio is outperformed by the median ratio, which is outperformed by the regression equation. In fact, as shown in Figure 3 on page 4, using the average and median ratios increases the dispersion because those methods produce predicted values both greater and less than the actual selling prices. This is not true of the regression model, whose predicted values are greater than the smallest selling price, and less than the largest selling price, thereby reducing dispersion by 10%. If value truly is a range, then you want that range to be as narrow as possible. As we now know, regression analysis will narrow that range considerably more than any average or median of ratios.

Now, for that picture. Figure 4 on page 5 shows the original selling prices and the predicted selling prices derived from the three prediction methods. No comments are necessary, except to say that this is one example of how the use of average or median ratios can lead you far astray from a reasonable conclusion of value.

Other reasons for substituting regression analysis for ratios are the following:

1. A fundamental axiom of finance and BV is that cash flows, and by proxy, revenues, drive value. Don't we, as business valuators, want to establish a model that explores the relationship between selling price and cash flow or revenues? An average or median ratio cannot model that relationship, cannot determine the magnitude of the relationships between the two variables, and cannot be used to make accurate predictions. We have yet to see a finance text that encourages the use of average ratios for valuing publicly traded companies in lieu of a regression model. Nor have we seen any articles in peer reviewed research journals that explore areas of interest using average or median ratios. Regression analysis is the tool of choice for exploring relationships and making predictions among financial experts and scientists. So should it be for business valuators.

2. Most of the SIC Code data sets are not linear in the relationship between price and SDE or revenue. They are curvilinear, and as such, value predictions based on averages or medians will always incorrectly value a company that has a value driver in the upper ranges of the distribution. Regression can very easily be modified to address this problem.

3. Assume two companies, each with sales of $1.0MM, but one has SDE of $180.0M, and the other has SDE of $260.0M. *Ceteris paribus*, the company with the higher SDE

Figure 2

Y	X		Outputs		
Selling Price	SDE	Ratio Y/X	Avg Ratio Y/X	Median Y/X	Linear Regression
40,000	20,000	2.00	27,222	25,000	41,333
43,333	20,000	2.17	27,222	25,000	41,333
43,333	30,000	1.44	40,833	37,500	45,167
46,667	30,000	1.56	40,833	37,500	45,167
50,000	40,000	1.25	54,444	50,000	49,000
50,000	40,000	1.25	54,444	50,000	49,000
46,667	50,000	0.93	68,056	62,500	52,833
53,333	50,000	1.07	68,056	62,500	52,833
56,667	60,000	0.94	81,667	75,000	56,667
60,000	60,000	1.00	81,667	75,000	56,667

Mean =	49,000	1.36	54,444		49,000
Std Dev =	6,295	0.43			5,714
COV (Std Dev) =		31.9%			
COV (RMSE) =			29.2%		5.7%
Median =		1.25		50,000	
AAD =		0.32		5,000	
COD =		25.8%		10.0%	
RMSE =			15,886	13,229	2,801

Elements of the Linear Equation:

Intercept = a =   33,667

Slope = b =   0.3833

Equation (y = a + bx):

Linear Regression = Predicted Selling Price = 33,667 + .3833(SDE)

Figure 3

Analysis of Dispersion

Legend: ◆ Avg Ratio Y/X   ■ Median Y/X   ▲ Linear Regression   ● Selling Price
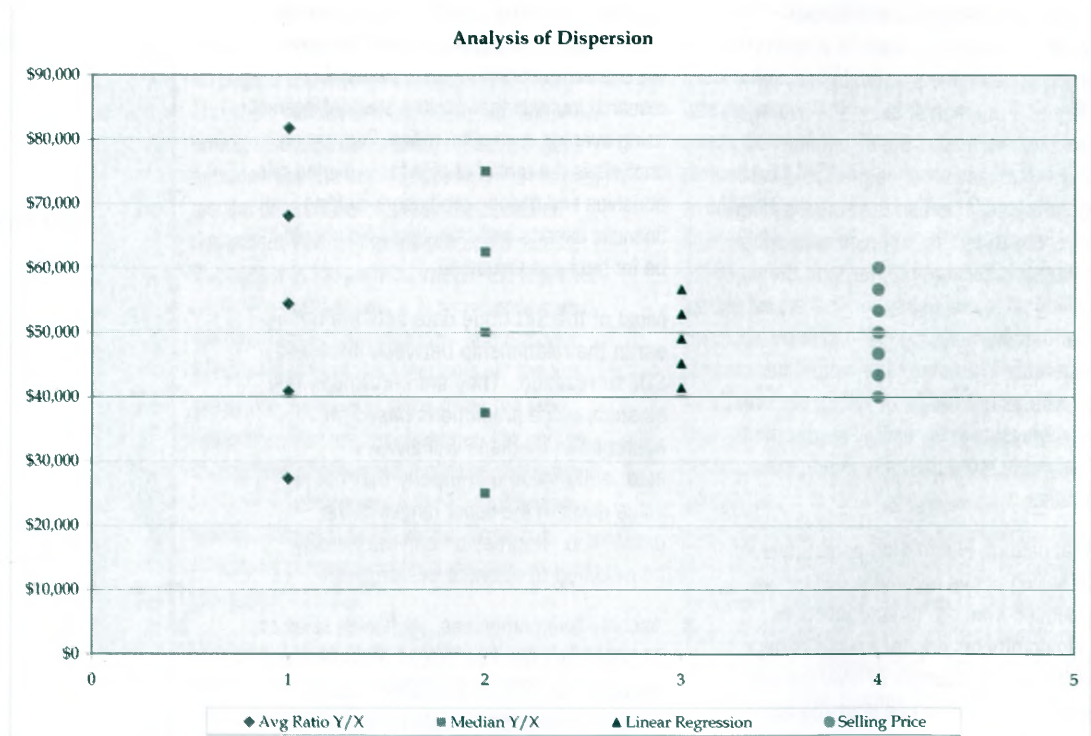
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Keynote Speaker

Sherron Watkins

Sherron Watkins is the former Vice President of Enron Corporation who alerted then-CEO Ken Lay, in August 2001, to accounting irregularities within the company, warning him that Enron 'might implode in a wave of accounting scandals.' She has testified before Congressional Committees from the House and Senate investigating Enron's demise. Ms. Watkins has been lauded in the press for her courageous actions. *TIME* magazine named Sherron, along with two others, Coleen Rowley of the FBI and Cynthia Cooper of WorldCom, as their 2002 Persons of the Year, for being "people who did right just by doing their jobs rightly."

In recognition of her outstanding demonstration of ethics in the workplace, Ms. Watkins has received numerous honors, including the Women's Economic Round Table 2003 Rolfe Award for Educating the Public about Business and Finance and the Distinguished Executive Award for 2003 from the National Academy of Management.

Now an independent speaker and consultant, Ms. Watkins shares her insights as to what went wrong, not only at Enron, but with much of the whole system that equity markets rely on to function properly. She focuses on ethical leadership and how to avoid any semblance of Enron-like behavior. Ms. Watkins is co-author, along with prize-winning journalist Mimi Swartz, of *Power Failure, The Inside Story of the Collapse of Enron*, published by Doubleday in March 2003.

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Saturday, December 2

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Conference agenda — National Business Valuation Conference

FIELDS OF STUDY: **A**-ACCOUNTING **AU**-AUDITING **BL**-BUSINESS LAW **BMO**-BUSINESS MANAGEMENT & ORGANIZATION
CS-COMPUTER SCIENCE **MKT**-MARKETING **SKA**-SPECIALIZED KNOWLEDGE & APPLICATION **T**-TAX

Conference Tracks

Fair Value: Fair Value for financial reporting is a complex and growing area; this track provides practitioners with theoretical and practical guidance in this expanding niche

Niche Vignette: these sessions will focus on industry-related issues and specialized areas of expertise

Litigation: for a look into the nature of valuation or damage cases in the context of litigation including the impact of technology on the litigation process

Emerging Issues: for the more experienced practitioner who wishes to explore more complex valuation topics and issues

Fundamental: for those with little or no valuation experience; and/or for those who wish to re-visit the basics, including how to do these types of valuations

Visit **www.cpa2biz.com/BV2006** for full session descriptions

Topics, Speakers, Fields of Study and Agenda are subject to change

SATURDAY, DECEMBER 2 PRE-CONFERENCE BONUS BVFLS SESSION (complimentary for BVFLS & ABV Members)

12:00 pm – 5:00 pm	**Registration & Message Center Open**
1:00 pm – 5:00 pm	**401 Selling Your Story to the Media to Build Brand Awareness and Attract Clients — A Media Training and Pitching Workshop MKT** David Colgren, COLCOMGROUP, INC., New York, NY Brad Monterio, COLCOMGROUP, INC., New York, NY

SUNDAY, DECEMBER 3 PRE-CONFERENCE OPTIONAL WORKSHOPS (additional fee)

8:00 am – 6:00 pm	**Registration & Message Center Open**
8:00 am – 11:00 am	**Concurrent Optional Workshops** (Select one)
	101 BVFLS Report Writing Workshop SKA W. James Lloyd, ValuePoint Consulting Group, LLC, Knoxville, TN Ronald L. Seigneur, Seigneur Gustafson Knight LLP, Lakewood, CO
	102 Hi-Tech SKA, T Neil Beaton, Grant Thornton LLP, Seattle, WA Scott L. Beauchene, Grant Thornton LLP, Seattle, WA Brent Sloan, Grant Thornton LLP, Seattle, WA
	103 How to Better Manage and Market Your BV Practice BMO, MKT Eva Lang, Financial Consulting Group, Germantown, TN Timothy W. York, Dixon Hughes PLLC, Birmingham, AL

SUNDAY, DECEMBER 3 MAIN CONFERENCE — DAY ONE

12:00 pm	**Main Conference Begins**
12:00 pm – 12:15 pm	**Welcome & Introduction** Robert Duffy, Grant Thornton LLP, Seattle, WA
12:15 pm – 1:30 pm	**General Session**
	1 Keynote Presentation Sherron Watkins, former VP of Enron Corporation, Independent Speaker and Consultant, Houston, TX
1:30 pm – 2:00 pm	**Afternoon Refreshment Break in the Exhibit Hall**
2:00 pm – 3:15 pm	**Concurrent Sessions** (Select one)
Fair Value	**2 GAAP & GAAS Overview A, AU** Marc Simon, BDO Seidman, LLP, New York, NY
Niche Vignette	**3 Healthcare Trends & Outlook: Implications for the Valuation of Healthcare Businesses in 2006 SKA** Cindy Collier, Healthcare Valuation & Litigation Services, Columbus, OH
Litigation	**4 Case Law Update BL** Jay Fishman, Financial Research Associates, Bala Cynwyd, PA Shannon Pratt, Shannon Pratt Valuations, LLC, Portland, OR
Emerging Issues	**5 Corporate Buy-Sell Agreements: Ticking Time Bombs or Reasonable Resolutions? SKA** Z. Christopher Mercer, Mercer Capital Management, Inc., Memphis, TN
3:15 pm – 3:25 pm	**Change Break**
3:25 pm – 4:40 pm	**Concurrent Sessions** (Select one)
Fair Value	**6 The Latest and Greatest on Fair Value Measurements and the Impact on SFAS 141 and 142 A** Mark Zyla, Willamette Management Associates, Atlanta, GA
Litigation	**7 Expert Witness Reports & Exhibits CS, SKA** Stephen J. Harhai, Law Office of Stephen J. Harhai, Denver, CO
Emerging Issues	**8 Responding to IRS §2036 and §2704 Issues in Family Limited Partnership Valuations T** Ron Seigneur, Seigneur Gustafson Knight LLP, Lakewood, CO David L. Starbuck, Baker & Hostetler LLP, Denver, CO
Fundamental	**9 Best Practices for Preparing a Financial Analysis — Approaches, Models and Related Issues for More Reliable Conclusions SKA** Christine Baker, The Rehmann Group, Grand Rapids, MI W. James Lloyd, ValuePoint Consulting Group, LLC, Knoxville, TN
4:40 pm – 4:50 pm	**Change Break**
4:50 pm – 6:00 pm	**General Session**
	10 What Lawyers Do to Silence Articulate Experts SKA Roger Dodd, Roger J. Dodd, Lawyers, P.C., Valdosta, GA
6:00 pm – 7:30 pm	**Welcome Reception** **ABV** Sponsored by ABV

MONDAY, DECEMBER 4 MAIN CONFERENCE — DAY TWO

7:00 am – 6:15 pm	**Registration & Message Center Open**
7:00 am – 8:00 am	**Continental Breakfast and Vendor Display**
8:00 am – 9:15 am	**General Session**
	11 BV Standards SKA Edward J. Dupke, Clifton Gunderson, LLP, Phoenix, AZ
9:15 am – 9:25 am	**Change Break**
9:25 am – 10:40 am	**Concurrent Sessions** (Select one)
Fair Value	**12 SFAS 141 Case Study A** Mark Edwards, Grant Thornton LLP, Charlotte, NC
Niche Vignette	**13 Recipe for the Valuation of an ESOP SKA** Larry R. Cook, Larry R. Cook & Associates, PC, Houston, TX
Litigation	**14 Damages: DCF-Equivalent or Business Valuation Delta — Which Approach Is "Right" and How Do You Critique Opposition? SKA** Darrell D. Dorrell, Financial Forensics, Lake Oswego, OR

Conference agenda National Business Valuation Conference

Emerging Issues 15 Make Me an Offer I CAN Refuse: An Alternate Look at Current Views **SKA** (repeated in session 18)
James R. Hitchner, The Financial Valuation Group, Atlanta, GA

10:40 am – 11:10 am Morning Refreshment Break in the Exhibit Hall

11:10 am – 12:25 pm Concurrent Sessions (Select one)

Fair Value 16 123R Overview **A, AU**
Dan Peckham, Deloitte & Touche, Dallas, TX

Niche Vignette 17 Private Equity Groups — What Do They Look For? **SKA**
Owen T. Johnson, Southard Financial, Memphis, TN

Emerging Issues 18 Make Me an Offer I CAN Refuse: An Alternate Look at Current Views **SKA** (repeat of session 15)

Fundamental 19 Estimating the Company — Specific Risk **SKA** (repeated in session 26)
Robert Reilly, Willamette Management Associates, Chicago, IL

12:25 pm – 1:40 pm Luncheon and Awards Ceremony

1:40 pm – 1:50 pm Change Break

1:50 pm – 3:05 pm Concurrent Sessions (Select one)

Fair Value 20 123R Case Study **A**
Gregory A. O'Hara, Stout Risius Ross, Inc., Cleveland, OH

Litigation 21 Ten Deadliest Mistakes of Valuation Experts in Litigation **SKA** (repeated in session 25)
Michael G. Kaplan, Kaplan, Abraham, Burkert & Company, Woodland Hills, CA

Emerging Issues 22 AICPA BVFLS Section Call for Papers The Valuation of Human Capital Intangible Assets **SKA**
Robert F. Reilly, Willamette Management Associates, Chicago, IL

Fundamental 23 FLP — How To's **T**
C. Brett Cooper, Carter, Belcourt & Atkinson, P.A., Tampa, FL

3:05 pm – 3:15 pm Change Break

3:15 pm – 4:30 pm Concurrent Sessions (Select one)

Fair Value 24 Bringing it All Together **A, SKA**
Moderator: Dave Dufendach, Grant Thornton LLP, Seattle, WA
Panelists: Mark Edwards, Grant Thornton LLP, Charlotte, NC
Gregory A. O'Hara, Stout Risius Ross, Inc., Cleveland, OH
Dan Peckham, Deloitte & Touche, Dallas, TX
Marc Simon, BDO Seidman, LLP, New York, NY
Mark Zyla, Willamette Management Associates, Atlanta, GA

Litigation 25 Ten Deadliest Mistakes of Valuation Experts in Litigation **SKA** (repeat of session 21)

Fundamental 26 Estimating the Company — Specific Risk **SKA** (repeat of session 19)

Fundamental 27 Common Errors in Business Valuation Reports **SKA**
Robin E. Taylor, Dixon Hughes PLLC, Birmingham, AL

4:30 pm – 5:00 pm Afternoon Refreshment Break in the Exhibit Hall

5:00 pm – 6:15 pm General Session

28 Ask the Experts **SKA**
Moderator: James R. Hitchner, The Financial Valuation Group, Atlanta, GA
Panelists: Z. Christopher Mercer, Mercer Capital Management, Inc., Memphis, TN
Shannon Pratt, Shannon Pratt Valuations, LLC, Portland, OR
Gary Trugman, Trugman Valuation Associates, Inc., Plantation, FL

TUESDAY, DECEMBER 5 MAIN CONFERENCE — DAY THREE

7:00 am – 1:00 pm Registration & Message Center Open

7:00 am – 8:00 am Continental Breakfast and Vendor Display

7:00 am – 8:00 am Early Riser Sessions (Select one)

201 AICPA Town Hall Meeting **SKA**
Mike Crain, The Financial Valuation Group, Ft. Lauderdale, FL

Emerging Issues 202 S-Corps **T**
Nancy Fannon, Fannon Valuation Group, Portland, ME

Emerging Issues 203 Fair Value in Dissenting and Oppressed Shareholder Matters: How to Avoid the Minefields **SKA**
Jay Fishman, Financial Research Associates, Bala Cynwyd, PA

Fundamental 204 Reasonable Executive Compensation — Data Sources & Dangers for BVers & Beyond **SKA, T**
Ralph Ostermueller, The Financial Valuation Group, St. Louis, MO

8:00 am – 8:15 am Change Break

8:15 am – 9:30 am General Session

29 The Cost of Illiquidity **SKA**
Aswath Damodaran, NYU Stern School of Business, New York, NY

9:30 am – 10:00 am Morning Refreshment Break

10:00 am – 11:15 am Concurrent Sessions (Select one)

30 Standards — Reconciling Between Multiple Professional Standards **SKA**
Mike Crain, The Financial Valuation Group, Ft. Lauderdale, FL

Niche Vignette 31 Valuing Small Businesses for Divorce **SKA** (repeated in session 35)
Gary Trugman, Trugman Valuation Associates, Inc., Plantation, FL

Emerging Issues 32 Valuing Intangible Assets for Business Combinations Under SFAS 141 **A**
Carolyn Worth, KPMG, LLC, San Francisco, CA

Fundamental 33 IRS Perspectives **T**
Ronald M. Cerruti, Internal Revenue Service, San Francisco, CA

11:15 am – 11:45 am Change Break

11:45 am – 1:00 pm Concurrent Sessions (Select one)

Emerging Issues 34 Comparison of Models — Recent Research and Developments **SKA**
Roger Grabowski, Duff & Phelps LLC, Chicago, IL

Niche Vignette 35 Valuing Small Businesses for Divorce **SKA** (repeat of session 31)

Fundamental 36 The Transaction Method: Uses and Abuses of Market Data **SKA**
Heidi Walker, Fannon Valuation Group, Portland, ME

Fundamental 37 Reconciling Income Approach Methodologies **SKA**
Jeffrey Risius, Stout Risius Ross, Inc., Farmington Hills, MI

1:00 pm Conference Adjourns

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Airline and car rental discounts are available only when you or your travel agent book through the 1-800 number. We strongly advise you to confirm your conference registration and hotel reservation prior to making your travel plans. The AICPA is not liable for any penalties incurred if you cancel/change your airline reservations. **Rates are subject to availability.**

Registration form

MEMBERSHIP INFORMATION

Very important — please be sure to complete.

AICPA Member	☐ Yes ☐ No	
ABV Designee?	☐ Yes ☐ No	Membership No. (Required for discount prices)
BVFLS Member?	☐ Yes ☐ No	

NICKNAME FOR BADGE   BUSINESS TELEPHONE

TITLE

E-MAIL ADDRESS

REGISTRATION INFORMATION
Please photocopy this form for additional registrants. If the information on your label is incorrect. please complete the following:

LAST NAME   FIRST NAME   MI

FIRM NAME OR AFFILIATION

STREET ADDRESS   SUITE   PO BOX

CITY   STATE   ZIP

CONFERENCE FEES Please circle appropriate rate.

MAIN CONFERENCE	ABV Designee	BVFLS Member	AICPA Member	Nonmember
☐ **M02 Early Bird Discount** SAVE $75 by 11/3/06	$750	$800	$850	$1,050
☐ **M01 Regular Registration**	$825	$875	$925	$1,125

BONUS SESSION — SATURDAY, DECEMBER 2 (complimentary for BVFLS & ABV Members)

☐ **401**	complimentary	complimentary	N/A	N/A

PRE-CONFERENCE WORKSHOPS — SUNDAY, DECEMBER 3 (additional fee)
8:00 am – 11:00 am (Select one)

☐ 101 ☐ 102 ☐ 103	$150	$150	$150	$150
Total	$_____	$_____	$_____	$_____

CONFERENCE PLANNER
Select one from each time period. To ensure that adequate seating is reserved for the conference sessions, you must complete this section in advance of the conference.

SUNDAY, DECEMBER 3 Concurrent Sessions
2:00 pm – 3:15 pm	☐2	☐3	☐4	☐5
3:25 pm – 4:40 pm	☐6	☐7	☐8	☐9

MONDAY, DECEMBER 4 Concurrent Sessions
9:25 am – 10:40 am	☐12	☐13	☐14	☐15
11:10 am – 12:25 pm	☐16	☐17	☐18	☐19
1:50 pm – 3:05 pm	☐20	☐21	☐22	☐23
3:15 pm – 4:30 pm	☐24	☐25	☐26	☐27

TUESDAY, DECEMBER 5 Concurrent Sessions
7:00 am – 8:00 am	☐201	☐202	☐203	☐204
10:00 am – 11:15 am	☐30	☐31	☐32	☐33
11:45 am – 1:00 pm	☐34	☐35	☐36	☐37

PAYMENT INFORMATION Full payment must accompany registration form.

My check for $_____ payable to **AICPA** is enclosed.

OR Please bill my credit card for $_____.

☐ AICPA VISA® Credit Card[1]   ☐ American Express®   ☐ Diners Club®
☐ Discover®   ☐ MasterCard®   ☐ VISA®

[1]If you don't presently have an AICPA VISA® Credit Card, please call **1-866-CPA-VISA** for more information or to apply for the card.
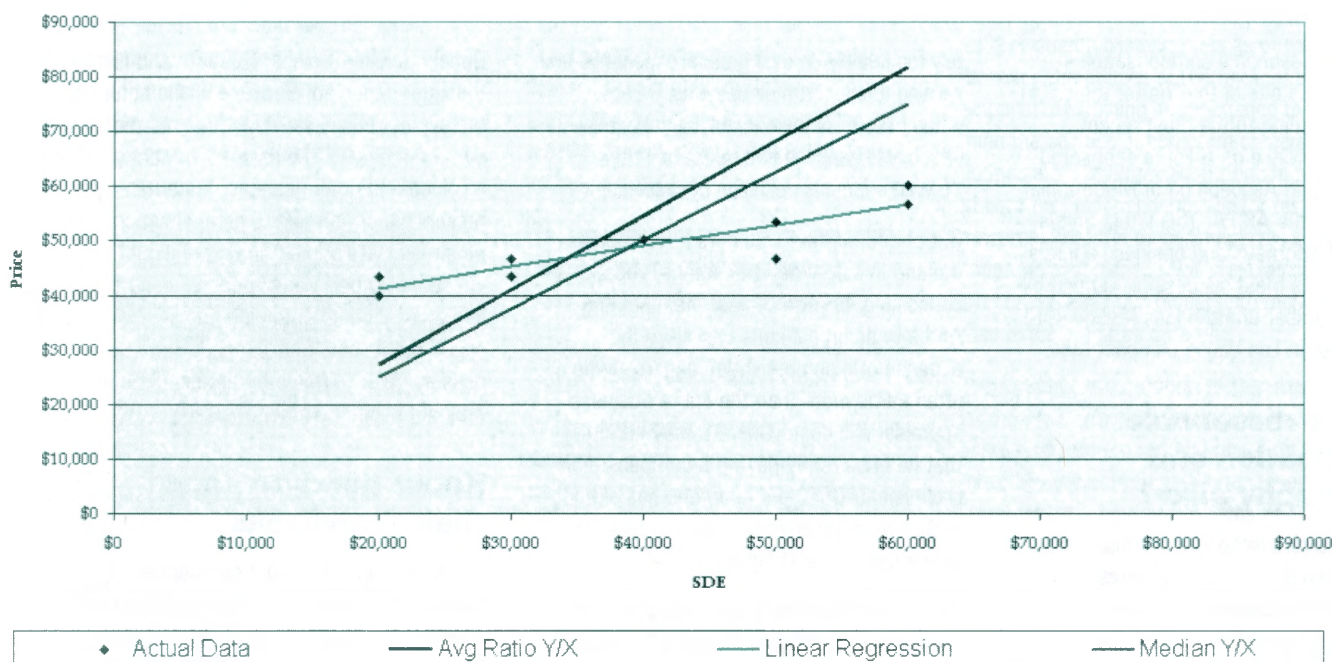
CARD NO.   EXP. DATE

BILLING NAME

SIGNATURE

In accordance with the Americans with Disabilities Act, do you have any special needs?

☐ Yes ☐ No (If yes, you will be contacted.)

FOCUS — October/November 2006

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Figure 4

Ratios vs Regression

Legend: ◆ Actual Data — Avg Ratio Y/X — Linear Regression — Median Y/X

should sell for more. Using just a multiple of sales, however, will not give this result, and in fact, will overvalue one company and undervalue the other. Regression analysis allows one to predict an entity's value based on revenue while also controlling for (i.e., accounting for or taking into consideration) operating margin.

4. The distributions of both selling prices and SDE or revenue are rarely normal, or even symmetrical (they are skewed to the right). This makes the predictions derived from averages and median ratios unreliable because the variation in predicted prices is not due to unbiased measurement error. That is, since the data are not symmetrical and normal, one cannot explain the variation in the data as just residual noise; it may be something else. Therefore, one needs to transform the data, both the *x*-variable and/or the *y*-variable, into normal and symmetrical distributions. Regression analysis more easily handles this task than does a univariate transformation process.

5. And finally, regression analysis provides for stronger courtroom testimony because it

allows the business valuator to speak to the relationship between the value drivers, SDE or revenue, and the item at issue, value, in more definitive terms than average or median ratios allow.

Future articles in this series will address the following topics:

1. How does one perform a regression analysis using Microsoft's Excel?

2. How does one apply it to the Bizcomps database.

3. Why does simple linear regression or ordinary least squares (OLS) rarely give us the right answer, and what can we do about it?

4. Can one handle SDE and annual revenue as value drivers in the same manner, or must one use different procedures for each?

5. How do you know if your regression model is giving you the best answer, or how to interpret the summary output data that Excel provides? ●

Reasonable Compensation: Can Your Opinion Survive This 12-point Checklist?

Determining reasonable compensation in divorce cases is one of the "hotter topics" in the field, according to the most recent National Conference on Divorce sponsored by the American Association of Matrimonial Lawyers and the AICPA. This latest annual gathering of attorneys and business appraisers was also its most successful, judging by the record number of attendees (nearly 450) who gathered in Las Vegas this past May.

How are reasonable compensation and pornography alike?

That's not a trick question (or one inspired by the Vegas venue). Too many valuators find themselves in trouble when testifying about reasonable compensation because they may rely too heavily on their general experience and training to support their opinions. "I know it when I see it" is their underlying rationale—which also happens to be Justice Potter Stewart's famous definition of obscenity.

But of course, few valuators have specific training in salary determinations, vocational counseling, or professional "headhunting." And few divorce clients can carry the expense of a compensation expert—who often earns more than the entire business appraisal will cost. (One attorney admitted that he is currently paying a compensation professional $550 per hour, and has already racked up thousands of dollars in fees for only a few hours of input.)

As a result, "too many appraisers are still acting as compensation experts," presenter Donald Schiller (Schiller DuCanto and Fleck, Chicago) observed. Because of the nature of the subject business—the duties of the owner/employee, the amount of money involved and other nuances, "determining reasonable or normalized compensation may be a major assignment in and of itself." A vocational expert would perform case-specific studies instead of relying on "homogenized" databases, Schiller said. But a business appraiser, limited by time and money—may not have any other choice.

Know thy data—and their drawbacks

There are some excellent compensation sources available, and Schiller—along with copresenter Jim Hitchner, CPA/ABV, ASA (Financial Valuation Group, Atlanta), agreed

Today's Best Compensation Databases

- America's Career Infonet, Employment and Training Administration, U.S. Department of Labor; *www.acinet.org/acinet*. Free on-line data, plus wages and trends information by occupation on a national, state, and metropolitan area basis.

- Compdata Surveys, Dolan Technologies Corporation; *www.compdatasurveys.com*. Executive and senior management base pay, annual incentives and benefits information on a national and regional basis, positions broken down by industry group, company size and revenue profile.

- CompQuest, Watson Wyatt Data Services; *www.wwds.com*. A database analysis and report-writing tool that permits creation of reports by relevant positions, geographic areas, industries, and company size.

- Executive Compensation Assessor, Economic Research Institute; *www.erieri.com*. Software and report packages available for more than 271 top management positions, with data adjusted for demographics, industry, company size, and compensation valuation date.

- Executive Compensation Database, Aon Consulting, Inc.; *www.ecomponline.com*. Database covers publicly-traded companies; company data available free on-line.

- Officer Compensation Database, Integra Information; *www.integrainfo.com/officer_compensation_database*. Officer compensation expressed in dollar amounts and as percentage of sales by industry and company size for over 900 industries.

- Officer Compensation Report, Aspen Publishers, Inc.; *www.aspenpublishers.com* (search for "officer compensation"). Data on salaries, bonuses, pay increases, ownership levels, and incentives for small- to mid-sized companies in eight industry groups.

- PayScale Salary Report, PayScale, Inc.; *www.payscale.com*. Customized compensation and benefit reports for specific positions based on industry, location, company size, experience, education and certifications. Free summary reports available on-line.

- Quick-Call Compensation Reports, Economic Research Institute; *www.erieri.com*. Analysts provide "instant" compensation reports on as-needed basis, starting at $200.

Source: Willamette Management Associates, "Valuing a Professional Practice," presentation materials by Robert F. Reilly, CPA/ABV ASA, Managing Director, for FAE Business Valuation Conference (May 15, 2006; New York).

that a target industry frequently offers the best data. "Most of them do benchmarking surveys," Hitchner noted, which provide productivity data and more. (See the accompanying sidebar for the most current, comprehensive bibliography of compensation databases.) But when using these surveys, "you've got to know the limitations of the data, and testify how you account for them," Hitchner said.

"The worst thing for the credibility of the business valuation expert is not knowing how the databases and surveys were compiled, and what they truly represent," Schiller seconded.

To make sure your compensation calculations meet the challenges of opposing attorneys, know the following:

1. Is the data collected on a national or regional basis?

2. Does the data include owner/employees where the amount of compensation reported may also include business profits as compensation (that is, partners in professions and businesses)?

3. Concerning data from business and professional associations, what are the sampling sizes that relate to the subject valuation?

4. When using SIC codes in identifying comparables, how do the particular characteristics of the subject company compare with the broader range of companies covered by the SIC code?

5. How does the data use/define the job titles, and are the actual duties comparable to the duties/hours of the subject owner/employee?

6. Does the data survey reflect averages? Medians? Quartiles?

7. Does the survey fairly reflect compensation for people with particular niches and sub-specialties; for example, matrimonial attorneys, forensic accountants, lobbyists, etc.?

8. Does the valuator need to include multiple job titles from the survey data to cover the owner/employee's duties?

9. What is the reliability of the statistics and sources that the survey uses?

10. Where applicable, are stock options, restricted stock, shadow stock compensation as well as other perks reflected in the data survey, and comparable to the owner/employee in question?

11. Were all companies in the database consistent in having/not having retirement plans separate from salary?

12. Is the owner a 'key person' in the business or a top performer/sales generator?

The courts aren't compensation experts either

The "multifactor" test for determining reasonable compensation still finds favor in the federal Tax Court and Court of Appeals. For example, in *Haffner's Service Station* v. *Commissioner* (1st Cir. 2003), the Court of Appeals discussed ten typical criteria to apply, including the employee's qualifications and scope of work, the size and complexity of the business, general economic conditions, etc.

But ever since Judge Posner in the *Exacto Spring Corp.* v. *Commissioner* case (7th Cir. 1999) issued a blistering rebuke of the multifactor test ("the Judges of the Tax Court are not equipped by training or experience to determine the salaries of corporate officers; no Judges are"), the prevailing trend has been toward the "independent investor test." This presumes that the owner/employee's compensation is reasonable, Schiller explained, "so long as the business owners are recovering their expected rates of return."

The Exacto case recognized that managers who generate higher returns on investment can usually command higher salaries. To rebut the presumption, it's necessary to show that the high return rates had little or nothing to do with the owner/employee's activities; or that the company was using the compensation to conceal a dividend.

"It's therefore important to learn what the owner/employee truly does," Schiller said. "And don't just ask him [or her]—ask the other employees and managers." More often than not, when it comes to compensation, coworkers and colleagues will tell it as they see it.

FYI . . .

Pension Protection Act of 2006

A summary of the major provisions of the Pension Protection Act of 2006 signed into law by President Bush on August 17, 2006, is available in the following Web locations:

• Detailed Summary of Tax, Trade, and Other Provisions

tp://waysandmeans.house.gov/media/pdf/taxdocs/072806pensionsummary.pdf

Of interest to practitioners who provide services related to marital dissolutions are provisions governing the division of pension benefits upon divorce.

• Detailed Summary of Charitable Provisions

http://waysandmeans.house.gov/media/pdf/taxdocs/072806charitable.pdf

• Sec. 6695A. Substantial and Gross Valuation Misstatements Attributable to Incorrect Appraisals

Sec. 6659A is of importance to valuation analysts. It covers the imposition of penalties, the amount of penalties, and exceptions related to valuation misstatement, and defines qualified appraisers and qualified appraisals. The definitions apply only to valuations used to support charitable deductions. These definitions do not appear in the law for estate and gift taxes. Current tax law doesn't require that a valuation report performed by an appraiser be attached to an estate- or gift-tax return.

Sec.6659A can be located by accessing *http://thomas.loc.gov,* along with the complete text of the act. Insert H.R.4 in the search box. When you get to the bill, you'll find Sec. 6659A in the contents list between Sec. 1219 and Sec. 1220.

Exposure draft on independence interpretations

On September 8, 2005, the Professional Ethics Executive Committee (PEEC) issued an omnibus exposure draft that proposes one new and one revised Interpretation under Rule 101, *Independence* (AICPA, *Professional Standards*, vol. 2, ET sec. 101.01).

This exposure draft responds to comments about an earlier exposure draft issued September 15, 2005. The earlier exposure draft contained proposed guidance regarding independence and the use of indemnification and limitation of liability provisions and the performance of forensic accounting services.

Comments on the exposure draft will be accepted through November 8, 2006, and should be sent to Lisa A. Snyder—Professional Ethics Division at lsnyder@aicpa.org. To download the exposure draft, go to *http://aicpa.org/members/div/ethics/2006_09_omnibus_ED.htm.*

A call for papers

The Journal of Forensic Accounting is seeking submissions for its second volume of "Forensic Accounting in Matrimonial Divorces." All submissions should be formatted in 12 pt. Times New Roman font and should be between 8 and 10 single-spaced pages in MS Word format. All submissions will be reviewed and should be sent to James A. DiGabriele, D.P.S., CPA/ABV, DiGabriele, McNulty & Co., LLC, 414 Eagle Rock Avenue, Suite 305, West Orange, NJ 07952 or electronically to jim@dmcpa.com. The deadline for submissions is May 1, 2007. ●

"Any change, even a change for the better, is always accompanied by drawbacks and discomforts. "

— Arnold Bennett