

**(1) The Guideline Public Company Method In Business  
Valuation, and  
(2) An Introduction to the Use of Regression Analysis  
to Make Better Business Valuation Decisions**

**A Guide for Attorneys Dealing with Business Valuation Issues**



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# Goals

- Correctly use/employ the method
- Make better decisions from the method
- When and when not to use- and defend your decision
- Avoid common errors
- Explain valuable statistical techniques for use with this and the M&A method

# What is the Guideline Public Company Method?

- Using knowledge about the multiples afforded by the market for public traded companies in the same or similar line of business as the private company to value the private company.
- “I value small companies- this has no relevance to me” - we’ll discuss this in more detail

# Common Myths

Myth #1- Download some 10Ks, cut and paste some public company descriptions for the report, compute some multiples, take a median or average multiple, compute a value and you're done!

- I want you as my opposition!
- The method requires diligence, detail and hefty analysis to be used correctly. Price the engagement accordingly.
- All public companies are unique just like all the private companies you value. If they weren't unique then all companies would have the same multiple.

## Myth #2- Save money and time by automating and downloading public company financials and multiples in spreadsheets

- Better make sure those numbers are right- often they are not!
- You adjust for unusual and non-recurring items in the private company- you must do the same for the public company- that means work on your part.
- Those downloaded results might reflect financial restatements made several years later that incorporate subsequent acquisitions/things not present at your earlier valuation date- Please, be my opponent!

## Myth #3- Time traveling is AOK with regard to public company financial statements, “after all, they are known or knowable”

- You only know what you know when you know it! The same is true with investing (buying companies).
- Missed earnings expectations are a daily event on Wall Street-what happens? The stock price gets slammed. Investors that bought shares earlier had no benefit of time travel to know expectations would not be met.
- Time travel is a bad habit. Do it for one thing and soon you'll be rationalizing other trips into the future.
- The real problem- a lazy valuator who does not want to compute a trailing 12 month actual result.



## Myth #4- I only value smaller companies, so I don't have to use the guideline public company method.

- There are many smaller public companies. You don't know until you search. Better hope your opposition doesn't find them
- You must still defend why you did not use the method, discuss the results of your search and what you found
- There is real value in doing the search- uncover acquisitions of smaller companies that can be used in the M&A method, get industry information, etc.

# When is a Company Obviously Too Small to Use the Guideline Public Company Method?

- Use common sense
- Small number of employees where key person risk is major
- Mom/pop business
- Dependency on one or several customers

# When Might a Large Company Not Be Valued Using the Guideline Public Company Method?

- Differences between it and public companies are large- if, for example, a 50% adjustment is needed to the public multiples the differences are too large to use the method in the first place.
- Unusual things in the private company- major lawsuits, very poor quality financials, fraud, major key customer

# Where to Begin?

- Identify the SIC code associated with your company's industry
- Ask management who they compete against or who is a public company in their industry- some companies don't show up in an SIC search
- Industry and trade associations
- Brokerage firm equity research- I use Schwab- it is free to customers.

# Resources for Public Company Searches

- SEC Edgar ([www.sec.gov/edgar/searchedgar/companysearch.html](http://www.sec.gov/edgar/searchedgar/companysearch.html))
- SECInfo.com ([www.secinfo.com/\\$/Search.asp](http://www.secinfo.com/$/Search.asp))
- Trade associations
- Let's try an example: SIC 5812: Restaurants- Fast Food

# Problems with Searches by SIC Code

- Companies often wrongly categorized.
- Sometimes misses companies that should be included.
- Includes filings by companies that are no longer traded, have been delisted, etc.
- Bad news- You have to go through each filing, at least summarily.

# Going Through The Initial Companies

- Have broad search criteria- e.g., maximum size (annual revenues), lines of business, regional or national, international, etc.
- Keep the criteria broad to uncover as many candidates as possible, then narrow them down later to those most similar. Do not initially be overly restrictive in your criteria.

# Same or Similar Line of Business- What Exactly Does That Mean?

*See Estate of Joyce C. Hall (92 TCM 312)*

- Your Materials Include “How Comparable Are Your Comparables” from our Fair Value publication
- Case available online at Banister Financial website under “Valuation Cases” tab



# Estate of Joyce V. Hall

- Hallmark Greeting Cards
- Obviously you would see if could find other publicly traded greeting card companies, right? American Greetings- yes, home free- or so the Service's expert thought.
- Let's see what makes something "comparable."

# “Comparable”

- Taxpayer experts- not American Greetings, but Coca-Cola, Avon, McDonald’s, IBM, and Anheuser Busch instead? How can this be?
- Hallmark and the above cos. enjoyed a similar financial structure, name recognition and dominant share of its market.
- Comparable does necessarily mean in the same/similar line business!

# But....

- Central Trust- the court directed the appraiser to use as broad a selection of public comparables as possible yet threw out the appraiser's two selected public companies due to their lack of comparability to the subject company.
- Northern Trust- Court disallowed public companies selected as not truly comparable. Despite similarities in capital structure and financial ratios, the companies selected by both appraisers were rejected due to the fact that they had no relation to the subject company's line of business.

# There is No Such Thing as the Perfect Comparable!

- Can rationalize away any company as not being comparable, but is this reasonable?
- Have to use common sense.
- Being overly restrictive can miss companies that provide valuable information.
- Don't necessarily assume larger companies are invalid.

# Guideline Companies to Toss

- Not freely and actively traded
- Pink sheet stocks, penny stocks
- Companies with accounting irregularities/investigation by SEC
- Large judgments or contingent liabilities that taint the company
- In financial distress, default on bank loans

# Should You Throw Out???

- Companies in the process of being acquired or for which tender offers have been made?
- Is there some synergistic or strategic factor driving the acquisition?

# You've Narrowed the List- Now What?

- Download 10Ks, 10Qs, 8Ks for each company.
- Scan through them and categorize each as to highest priority- the best comps, 2nd best, etc.
- Decide which one ones to keep.
- How many is enough?
- Again- what about the size issue?

# Spread the Public Companies

- Do it yourself for reliability reasons already noted.
- If you insist, there are services- FetchXL, etc.
- If you are my opponent I will review your public company data to verify everything is correct.



# Example of a Spread in the Telecom Sector Involving Local Telephone Companies

- Assignment- value a small, closely held, mostly rural telephone company.
- Let's look at an excel spreadsheet that we use
- Note that we use “total invested capital multiples” (TIC)- what do I mean by that?

# Common Mistakes Inputting Public Co. Data

- Using data not available at the valuation date- time travel
- Using share prices from reporting services which reflect subsequent splits, but using pre-split EPS, etc. to compute multiples (or vice versa)
- Let's look at share prices for Iowa Telecommunications (symbol IWA) <http://finance.yahoo.com/q/hp?s=IWA>
- Failure to adjust for non-recurring items- not always obvious- read the 10K

# What Multiples to Compute?

- Total Invested Capital (TIC) to EBITDA and to revenues
- P/E, Price/Cash Flow, Dividend Yield
- TIC to EBITDA multiples more reliable usually- less impacted by leverage differences, accounting for depreciation, other distortions
- Can you look only at a company's EBITDA? "We're EBITDA Positive."

# Goals of Analyzing the Public Company Versus the Private Company

- Uncover risk differences
- Uncover growth differences
- In the capital asset pricing model, the cap rate is determined by these two variables.

**Are observable factors such as markets served, size, profitability, lines of business, etc., reflected in a pattern in the public multiples?**

**We'll look at a telephone company valuation in just a minute to see.**

# **Beware... What We Think Affects Value May Not Be What Drives Value in a Specific Instance or Industry.**

- Witness the dot.com boom
- Rely on what the “market” and your analysis tells you, not what your beliefs or preconceptions are about what ought to drive value
- Don’t assume size, profit margins, leverage, etc. warrant multiple adjustments to your private company

# What to Analyze?

- Size
- Profitability, profit margins
- Financial risk
- Trends in revenues/earnings
- Markets served, diversification issues (customers, suppliers, regions served, etc.)
- Key person issues
- Factors unique to the industry

# Let's Walk Through an Actual Valuation of a Relatively Small, Rural Telephone Company

- Some analysis truncated or removed to avoid disclosing details about my real subject company- what you see is scaled back somewhat.
- Financial and other information changed to protect the innocent.
- While this is a telephone company, the same concepts of analysis could be applied to any industry.



# What did the analysis tell us?

- Rural, urban, larger, smaller, wireless, no wireless, high or low profit margins or leverage- they really didn't show an effect on the multiple
- This is contrary to what management told me- they said they would be worth more or less due to those factors
- What management says and what is in the market are not always the same! That is one reason why we analyze.

# What did the analysis tell us? (continued)

- Despite what I said earlier, the median EBITDA multiple was probably the one to use here.
- EBITDA multiples were a better predictor of values and fell in a narrower range than did P/E multiples.
- Challenge- In 9 of your next 10 uses of the method I bet you will find EBITDA multiples more reliable- but you must verify that is the case!

Management: “dividend payouts and yield are the major factors driving local telco EBITDA multiples.”

What does the data say?

- Look at sample regression analysis.
- Shortcoming- limited data points. I am showing the results to illustrate the method, but ideally, would want much more data.

		EBITDA
	Dividend Yield	Multiple
Commonwealth	6.0%	5.8
Consolidated	9.4%	8.1
Iowa Telecomm.	8.4%	8.7
SureWest	5.9%	5.3
D&E	4.2%	5.9
CT Communications	1.5%	7.8
North Pittsburgh	3.0%	6.9
Hickory Tech	6.7%	7.0

# Dividend Yield?

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.288650374							
R Square	0.083319039							
Adjusted R Square	-0.069461122							
Standard Error	1.251931895							
Observations	8							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	0.854749188	0.854749188	0.545352476	0.488091702			
Residual	6	9.404000812	1.567333469					
Total	7	10.25875						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 90.0%</i>	<i>Upper 90.0%</i>
Intercept	6.194884158	1.098703528	5.638358299	0.001333093	3.506453478	8.883314837	4.059905134	8.3298
Dividend Yield	13.17278656	17.83770636	0.738479841	0.488091702	-30.47450844	56.82008156	-21.48909257	47.834
90% Confidence Level Used								
Significance F is not less than 0.10, therefore relationship cannot be shown to be other than chance.								

# What about other relationships?

- Size impact?
- Density of markets served- are rural telcos worth more than urban telcos, and vice versa?
- EBITDA Profit Margin?

# Size- Are Larger Telcos Rewarded With Higher Multiples?

	Revenues	Multiple
Commonwealth	\$333,856	5.8
Consolidated	\$321,429	8.1
Iowa Telecomm.	\$231,640	8.7
SureWest	\$218,588	5.3
D&E	\$176,247	5.9
CT	\$171,665	7.8
North Pittsburgh	\$109,804	6.9
Hickory Tech	\$92,512	7.0

# Size in Annual Revenues?

SUMMARY OUTPUT							
<i>Regression Statistics</i>							
Multiple R	0.014816643						
R Square	0.000219533						
Adjusted R Square	-0.166410545						
Standard Error	1.307446485						
Observations	8						
<i>ANOVA</i>							
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>		
Regression	1	0.00225213	0.00225	0.00132	0.972222861		
Residual	6	10.2564979	1.70942				
Total	7	10.25875					
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>
Intercept	6.895495267	1.24615081	5.53344	0.00147	3.846274085	9.944716448	3.846274085
Revenues	2.02953E-07	5.5914E-06	0.0363	0.97222	-1.34788E-05	1.38847E-05	-1.3479E-05
90% Confidence Level Used							
Significance F is not less than 0.10, therefore relationship cannot be shown to be other than chance.							



# Density of Markets- Access Lines/Square Mile- Versus EBITDA Multiple

	Lines/Sq. Mi.	EBITDA Multiple
SureWest	1,558	5.3
North Pittsburgh	390	6.9
D&E	168	5.9
CT	156	7.8
Commonwealth	65	5.8
Consolidated	51	8.1
Iowa	13	8.7

# Density?

SUMMARY OUTPUT							
<b>Regression Statistics</b>							
Multiple R	0.597009217						
R Square	0.356420005						
Adjusted R Square	0.227704006						
Standard Error	1.148864931						
Observations	7						
<b>ANOVA</b>							
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>		
Regression	1	3.654832567	3.654832567	2.769041984	0.156987759		
Residual	5	6.599453147	1.319890629				
Total	6	10.25428571					
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 90.0%</i>
Intercept	7.415239223	0.523535282	14.16378126	3.15856E-05	6.069448936	8.761029509	6.360290304
Access Lines/Sq. Mi.	-0.001418857	0.000852656	-1.664043865	0.156987759	-0.003610678	0.000772965	-0.003136999
90% Confidence Level Used							
Significance F is not less than 0.10, therefore relationship cannot be shown to be other than chance.							
Low R2							

# EBITDA Profit Margin?

## SUMMARY OUTPUT

### Regression Statistics

Multiple R	0.21229923
R Square	0.04507096
Adjusted R Square	-0.11408388
Standard Error	1.27778312
Observations	8

### ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.46237174	0.46237174	0.2831894	0.613737884
Residual	6	9.79637826	1.63272971		
Total	7	10.25875			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 90.0%	Upper 90.0%
Intercept	5.82976841	2.13005287	2.73691254	0.03387405	0.617716817	11.04182	1.6906917	9.96884512
EBITDA Margin	2.61411586	4.91231646	0.53215543	0.61373788	-9.40588948	14.6341212	-6.93140059	12.1596323

90% Confidence Level Used

Significance F is not less than 0.10, therefore relationship cannot be shown to be other than chance.

Low R2

# EBITDA Dollars to Total Invested Capital Value?

SUMMARY OUTPUT									
<b>Regression Statistics</b>									
Multiple R	0.92480118								
R Square	0.85525723								
Adjusted R Square	0.83113343								
Standard Error	150908.395								
Observations	8								
<b>ANOVA</b>									
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>				
Regression	1	8.0738E+11	8.0738E+11	35.4528473	0.001004041				
Residual	6	1.3664E+11	2.2773E+10						
Total	7	9.4402E+11							
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 90.0%</i>	<i>Upper 90.0%</i>	
Intercept	16091.5773	115598.186	0.13920268	0.89384488	-266766.9934	298950.148	-208536.54	240	
EBITDA (\$000s) Latest Yr.	6.81116378	1.14392029	5.95422936	0.00100404	4.012091667	9.61023589	4.58832043	9.03	
90% Confidence Level Used									
Significance F less than 0.10, therefore relationship not by chance at 90% confidence.									
High R2									

# Conclusions

- Relationship between dividend yields and EBITDA multiples not statistically significant (the F Significance item we discussed), same with size and EBITDA profit margins.
- EBITDA dollars found to be the most significant driver of value. Therefore, I used the EBITDA multiple.
- Not shown- I expanded the universe of telcos and found the same outcome- dividends did not have a high R square AND the relationship was not statistically significant. A high R square, by itself, proves nothing.

# Statistical Techniques to Make Better Decisions

- Later we will discuss regression analysis, how to use it, how to interpret results
- Other techniques- look at coefficient of variation of the multiples to see if one type clusters better than the others

# Coefficient of Variation

- Standard deviation of the sample divided by the mean- a number showing variation of results relative to the mean.
- Your eyes can trick you- this creates an objective score of sorts.
- A higher coefficient of variation shows higher variation, and vice versa.
- Multiples with lower covariance are more clustered and perhaps more reliable to use.

# Coefficient of Variation- Simple to Compute in Excel- Even a Caveman Can

- Compute standard deviation of the range of data: Stdev(A1, A2, etc.)
- Compute the mean of the range of data: Average(A1, A2, etc.)
- Divide standard deviation by the mean. The result: covariance.
- Look at simple example and show how to do in Excel



# Differences in Risk and Growth- Implications for Multiples

- Cap Rate = Discount rate - growth rate
- Inverse of p/e is e/p = cap rate (sort of)- assuming growth is constant to perpetuity
- A high p/e rate for a public company (and therefore, a low cap rate) can only mean one or both of two things- low risk and/or high near term anticipated growth rate
- How can you use this knowledge to arrive at a multiple to apply to your private company, which has a different risk and growth profile?

- Make the multiple a cap rate by taking its inverse.
- Adjust for differences in risk and growth.
- Invert the adjusted cap rate back to an adjusted multiple.
- Apply to your private company.

## Example:

P/e multiple:	20 x
Invert to get cap rate:	5%
Plus: Higher risk for subject co.	2%
Plus: Adj. for slower subject co. growth	<u>3%</u>
Equals: Adjusted cap. rate	10%
Invert to get adjusted p/e	10 x

-Looks simple, but just how you do decide the adjustments?

# Risk Part of Differences

- Subjective.
- Let your analysis drive the decision.
- Financial risk and business risk- how are the subject co. and the public companies different? How would you assess their relative risk if you were using the income approach and developing a cap rate?
- What if the differences are so large as to result in the huge P/E adjustment previously shown? Are the public multiples really relevant at all? This method can help prove they are not!

# Growth Part of Differences

- Subjective, but can use math and common sense to make a better decision.
- If risk is equal and p/e is high, this implies a high growth rate is expected by the market.
- BUT... is it into perpetuity? NO WAY.
- THEREFORE... must break the growth rate down into short, intermediate and long and determine the implied growth rate over the entire period.

# Example to Calculate Implied Long-Term Growth Rate, Public Co.

- Krispy Kreme, before it imploded, when going public.
- S1 registration statement (to go public) forecasted store growth of 10% over the next five years.
- Assume (although there are other things that impact growth) that this is KKD's growth rate for next five years.

# Assumptions to Calculate Krispy Kreme's Implied Long-Term Growth Rate

- Second 5 years (Years 6 to 10)- Assume growth drops to 75% of the 10% rate of the first 5 years, or 7.5%.
- Years 11 to 40- Assume 5.0% (based on long-term GDP and inflation)- no company can grow faster than the economy over the long-haul.

# One More Key Issue

- Near-term growth in earnings is much more valuable, in present value terms, than growth in later years.
- **THEREFORE**, the implied growth rate in earnings must be adjusted for the time value of money, using the discount rate for risk.



# Using excel to determine the growth rate

- Let's look at an excel spreadsheet to calculate the implied long-term growth rate, using an 18% discount rate.
- Could get the public company's cost of equity capital (its discount rate) from Ibbotson (now part of Morningstar). Here we'll just assume it is 18%.

# Result

- **Implied compound rate of growth for Krispy Kreme is 6.2% (adjusted for time value of money impact).**
- **Suppose the analysis for the private company suggests its long-term growth rate is 5.0%.**
- **KKD is expected to grow 1.2% per year fasted. Now, adjust “cap rate” of KKD accordingly for the growth component.**

P/e multiple of KKD:	15 x
Invert to get cap rate:	6.7%
Plus: Higher risk for subject co.	4.0%
Plus: Adj. for slower subject co. growth	<u>1.2%</u>
Equals: Adjusted cap. rate	11.9%
Invert to get adjusted p/e	8.4 x

# Concluding Comments on Guideline Public Company Method

- Valuable when used correctly- worthless when used incorrectly
- Hard work to correctly employ
- Not simply the median multiple- requires thought and analysis to select multiple and make reasonable adjustments
- Useful in valuing some some “smaller” companies

# Regression Analysis

- Touched on highlights earlier
- Now will give more hands on examples
- Not just useful in guideline public company or merger and acquisition method
- Also useful in “active” versus “passive” appreciation- will give an actual example

# Refresher

- $y = a + bx$  where  $y$  is the dependent variable, i.e., what we are trying to predict,  $a$  is the intercept, and  $x$  is the independent variable on which we hypothesize that  $y$  depends.  $b$  is the slope coefficient
- Example:  $y$ , my weight,  $x$ , the number of Krispy Kreme doughnuts I eat
- What regression tries to find- does there appear to be a relationship between  $y$  and  $x$ , what is the relationship, and is more than simply by chance

# Problems

- Assumes a “linear” relationship, yet not all relationships are linear.
- Even if the relationship is shown to be strong (high R-square) and more than by chance (statistically significant), this does not prove causality, i.e., that  $x$  causes  $y$ . Common sense comes into play.
- The outcome depends on the quality of the underlying data.
- Need sufficient sample size of data- often a problem in valuation

# Active-Passive Appreciation Example

- What is active-passive appreciation?
- Active- changes in the value of a business during marriage due to the “active” efforts of the spouse.
- Passive- changes in the value during marriage due to everything else- market forces, competition, the economy, etc.
- Helpful to begin by determining impact of forces you can observe that impact the company first- key passive forces.



# Building Materials Manufacturer

- Growing rapidly throughout most of 1990s
- Products go mostly to homebuilders for use in residential construction, sold to customers throughout U.S.
- 1990s were boom time for residential construction
- Therefore- hypothesize that, other things being equal, the company's revenues and profits depend heavily on homebuilding demand.

# Homebuilding Measures

- Have to find observable “x” data on homebuilding activity to use against which to relate to our “y” value.
- Decide on using data on annual housing starts- data readily available and of good quality, covering a long period of time.
- Our y value- we decide on annual revenues.
- What are potential problems in using annual revenues?

# Our Initial Hypothesis

- $y = a + bx$ , where  $y$  = Company annual revenues, and  $x$  = annual housing starts
- Now- run regression to test the relationship
- Let's look at the data, then run a regression in excel

**Relationship Between Woodco Revenues and Residential Housing Starts (1989-2006)**

Year	Housing Starts (x)	Revenues (\$000s) (y)
1989	1,146,300	\$12,100
1990	1,081,400	\$14,600
1991	1,003,400	\$14,700
1992	894,900	\$15,400
1993	840,400	\$14,500
1994	1,030,100	\$16,900
1995	1,125,600	\$21,300
1996	1,198,400	\$26,800
1997	1,076,300	\$26,000
1998	1,161,000	\$30,000
1999	1,133,600	\$29,500
2000	1,271,400	\$33,100
2001	1,302,500	\$45,900
2002	1,230,900	\$50,400
2003	1,273,200	\$47,100
2004	1,358,500	\$63,400
2005	1,499,000	\$69,100
2006	1,610,500	\$83,400

# Let's Show How to Do it in Excel

- Must have the “data analysis toolpak” installed- comes standard with Excel, you just have to install it.
- We'll use Excel 2011, but it is very similar in earlier versions of Excel.

## Regression Results

### SUMMARY OUTPUT

#### Regression Statistics

Multiple R	0.910015553
R Square	0.828128306
Adjusted R Square	0.817386325
Standard Error	9082.811137
Observations	18

#### ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	6359951781	6359951781	77.0926999	1.6248E-07
Residual	16	1319959330	82497458.16		
Total	17	7679911111			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	-84303.01836	13656.53815	-6.173088481	1.3381E-05	-113253.5858	-113253.5858
Housing Starts (x)	0.10007266	0.011431647	8.780244863	1.6248E-07	0.124606669	0.076138651

Above statistics based on 95% confidence level

# Interpreting Results

- #1- is the relationship between x and y anything more than by random chance- if Significance F statistic is less than 0.05 (at a 95% probability level), then relationship is likely not random
- #2- R square- how much of the variation in y can be explained by the variation in x
- #3- Does the direction of the relationship as measured by “b” (the slope coefficient) make sense?
- #4- Does the relationship make commonsense- the acid test.

# Does the Relationship Make Sense?

- Companies in the same or similar industries indicate, in their filings with the Securities and Exchange Commission (SEC), the importance that housing activity has on their results and the demand for their products. This anecdotal information confirms the assessment by Woodco's management of the importance of housing activity and lends additional support to the credibility of regression analysis of the statistical nature of this relationship.
- Makes common sense.



# Conclusions

- Levels of housing starts in a given year play a major role in influencing Woodco's performance.
- Since there is a close relationship of revenues and earnings to housing starts and earnings heavily impact the value of a business, this suggests that housing starts are a major passive force shaping Woodco's results and therefore value over time.

# Caveats

- Numbers rarely tell the whole story!
- Yes-Residential construction activity is a powerful passive force which plays an important role in Woodco's revenues and earnings in a given year and, ultimately, in its value.
- However, Woodco cannot run on cruise control. Management must manage to achieve results, compete effectively, develop new products and otherwise make the right decisions to benefit from changes in demand.
- Despite what statistics show, it may not be reasonable to assume that 82.8% of the variations in the value can be explained by passive forces and is therefore separate property. The truth must be that there is indeed a strong passive element, but also an important active one that means the effect may be less than 82.8%. This is where subjective analysis and further inquiry by the valuator come into play.

- Caution- Regression is much more complex than this simplistic overview.

For more information on regression...

“A Second Course in Statistics: Regression Analysis,”  
by William Mendenhall and Terry Sincich, published by  
Pearson Prentice Hall.

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