# The Butler Pinkerton Model™: A New Approach to Company-Specific Risk

**BPM**
Butler Pinkerton Model™

## Rhode Island Society of CPAs

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BPM: A New Approach to CSR

# Learning Objectives

- Answer the "Who, What, Why, Where and How" of company-specific risk (CSR)

- Compare and contrast traditional (and newer) techniques with the Butler Pinkerton Model$^{TM}$ (BPM)

- Understand the theory, assumptions and key conclusions behind total beta and the BPM

- Address others' observations of the BPM

- Illustrate practical applications of the BPM to properly assess subject company total risk as well as CSR

- Understand the need to move from "Mostly Art" to "Part Art/Much More Science" on total cost of equity (TCOE) and CSR

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# Introduction: Serendipity

Motivation to understand risk and return better:

- Professor Damodaran's website and Total Beta
  - http://pages.stern.nyu.edu/~adamodar/
  - Investment Valuation (2nd Edition); Chapter 24

- "Aha" moment

# **Who's** on First?: Other Names for CSR

- Investment-specific risk
- Property-specific risk
- Nonsystematic risk
- Unsystematic risk
- Diversifiable risk
- Unique risk
- Idiosyncratic risk
- Residual risk
- Non-synchronous risk
- Alpha risk
- Non-beta risk

Part of TCOE



» **The Fudge Factor**

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# **What** is CSR?

- The portion of <u>total risk </u>specific to an individual security that can be avoided through diversification.

- It is the last component of <u>total risk </u>that makes the investment unique.

- Uncertainty of expected returns arising from factors other than the market itself.

# **Why** is CSR Important?

- How many business owners have you met who are properly diversified?

- How many buyers and potential buyers have you met who are properly diversified?

- Are you properly diversified?

- CSR compensates investors for risk that cannot be diversified away.

# **Where** Do We Use CSR?

- Directly in every income approach
  - Cost of equity
  - Weighted Average Cost of Capital (WACC)

- Indirectly in the market approach
  - Selecting subject-specific pricing multiples from guideline companies/transactions

# **Where**: In Modified CAPM

- Total Cost of Equity (TCOE) =
  - » Risk-free rate ($R_f$)
  - » + Equity risk premium (ERP) x Beta
  - » + Size premium (SP)
  - » **+ CSRP**



MOUNTAIN IMAGES
Everest South West Face Sunset

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# **Where**: In Build-Up Method (BUM)

- Total Cost of Equity (TCOE) =
  - » Risk-free rate ($R_f$)
  - » + Equity risk premium (ERP)
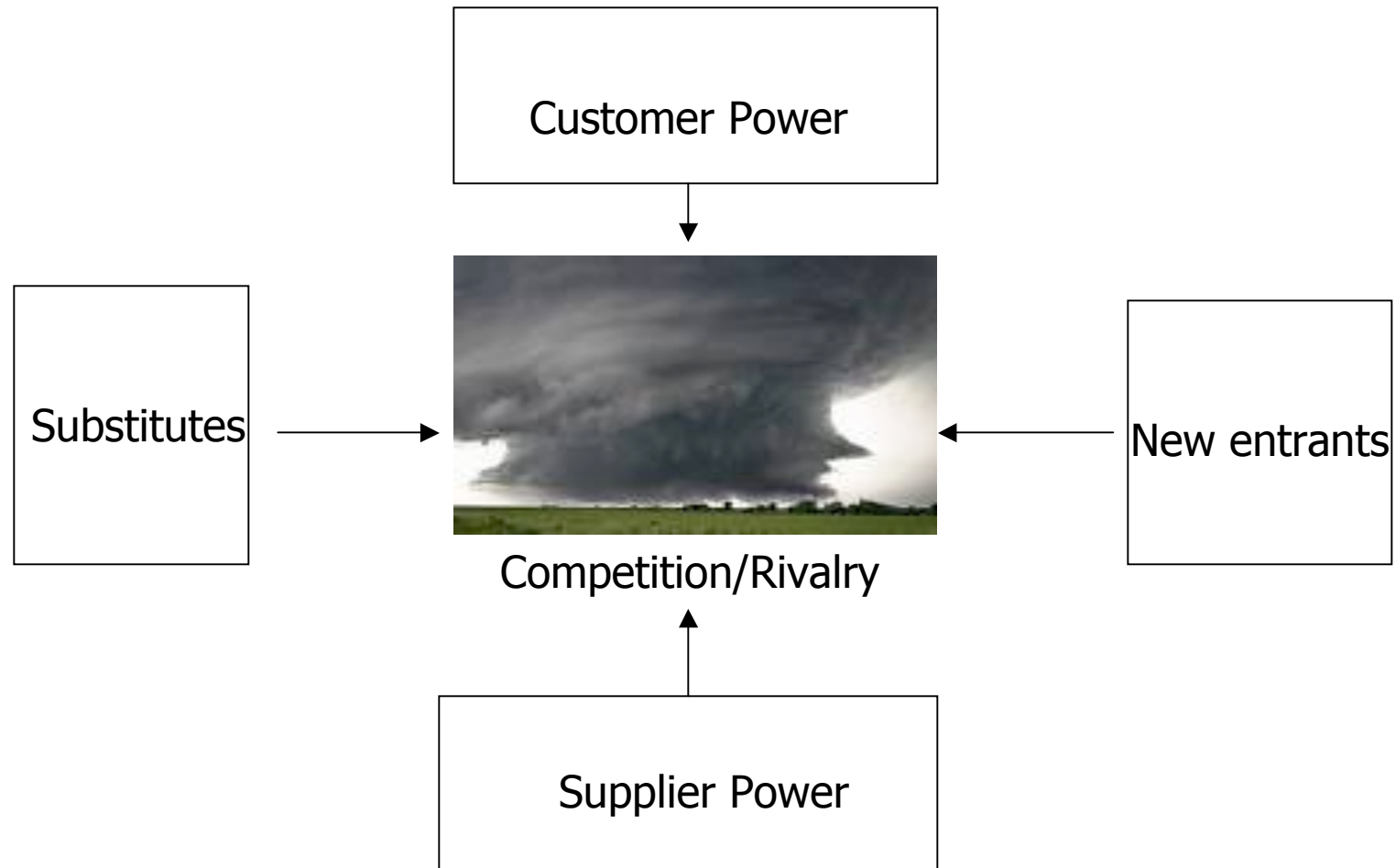  - » + Industry premium
  - » + Size premium (SP)
  - » **+ CSRP**



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# **How** to **Analyze** CSR: Traditional Methods

- Black/Green Factors

- Warren Miller/SPARC Factors

- Mercer Factors

- Finison/Dailey Factors

# Porter's Five Forces



Customer Power

Substitutes

Competition/Rivalry

New entrants

Supplier Power

# CSR Analyses

| Negative risk factors | +/- | Numeric | Listing |
|---|---|---|---|
| Operating history, volatility of rev & earn. | +++ | 3.5 | X |
| Lack of management depth | ++ | 1.0 | X |
| Lack of access to capital resources | + | 0.5 | X |
| Over reliance on key persons | ++ | 1.0 | X |
| Lack of size and geographic diversification | + | 0.5 | X |
| Lack of customer diversification | | 0.0 | |
| Lack of marketing resources | + | 0.5 | X |
| Lack of purchasing power | | 0.0 | |
| Lack of product/market. dev. resources | + | 0.5 | X |
| Over reliance on vendors/suppliers | | 0.0 | |
| Limitations on distribution system | | 0.0 | |
| Limitations on fin. reporting/controls | + | 0.5 | X |
| **Positive risk factors** | | | |
| Long term contracts, unique product | | 0.0 | |
| Patents, copyrights, franchise rights | - | (1.0) | X |
| **Net increase to Cost of Equity** | **7.0** | **7.0** | **7.0** |

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# CSR – Subjective Adjustment

**Mercer "An Adjusted Cyclical Asset/Pricing Model (ACAPM)," *Business Valuation Review* (Dec, 1989)**

| SELECTED SPECIFIC COMPANY RISKS | |
|---|---|
| | |
| **Specific Risk** | Premium Range |
| | |
| Key Man, Management | **0% - 5%** |
| Absolute Size | **0% - 5%** |
| Financial Structure | **0% - 5%** |
| Product/Geographical Diversification | **0% - 5%** |
| Customer Diversification | **0% - 5%** |
| Earnings: Margins and Historical Predictability | **0% - 5%** |
| Other Specific Risks | **0% - 5%** |

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# Finison/Dailey Model$^{TM}$

SWOT

- Strengths/Weaknesses

- 5-point scale
  - -2: Critical weakness
  - -1: Weak
  - 0: Neutral
  - +1: Strong
  - +2: Core competence

- Opportunities/Threats

- 5-point scale
  - - 2: Critical weakness
  - - 1: Weak
  - 0: Neutral
  - +1: Opportunistic
  - +2: Very opportunistic

Grid: -3% to +15%

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# Summary of Factor Models

- Excellent models to understand CSR

- Unfortunately, they offer little support to quantify a CSRP
  - No empirical data
  - No market-derived evidence
  - Almost completely subjective
  - Why −3% to 15% in Finison/Dailey Model$^{TM}$?

   *If you want to make enemies, try to change something.*

   Woodrow Wilson

# Other Methods: Study of Stock Price Reactions

- "The Impact of Management Depth on Valuation"
  (Steven E. Bolton, PhD, ASA, CBA and Yan Wang,
  Business Valuation Review, September 1997)
  - "We observe increasingly larger average declines in the stock prices of public firms accompanying significant management changes as the number of persons on the management team decreases."
  - "The stock price decline averages about 9.43% for firms with fewer than six on the management team and probably should be extrapolated higher for smaller firms, although public data was not available for testing."

# New Thought on Private Company Discount

- "Owner's Lack of Diversification and the Cost of Equity Capital for a Closely Held Firm" (Business Valuation Review (Winter 2007) – Daniel L. McConaughy, PhD and Vincent Covrig, PhD

  - Certainty-Equivalent Approach: Adjusts the risky cash flows to their "certainty equivalents" and then discounts them at their risk-free rate
  - Risk-adjusts the risky cash flows in the numerator
  - PV = (Most Probable Cash Flow – (standard deviation of cash flows/standard deviation of market)*ERP)/(1+risk-free rate)
  - Uses Monte Carlo simulations to estimate the most probable value for total cash flow as well as its volatility.
  - Example results in a lack of diversification discount equal to 28.5%.

# Cost to Cure: Adjustments to Cash Flows

- Key salesperson: CSRP may be represented by cost of buying life insurance sufficient to reimburse the company for the possible loss of services.

- Potential environmental cleanup costs: Estimate the probability weighted costs of remediation

Cost of Capital: Applications and Examples, Third Edition, by Pratt and Grabowski

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# Fundamental or Accounting Measures

- Duff & Phelps *Risk Study*
  - Operating margin
  - Coefficient of variation in operating margin
  - Coefficient of variation in return on equity

- $TCOE = R_f + RP_{m+s+u}$

| Accounting Measure | % | $RP_{m+s+u}$ |
|---|---|---|
| Operating margin | 14.6% | 8.6% |
| CV (Operating margin) | 15.8% | 9.3% |
| CV (ROE) | 34.7% | 8.7% |

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# Fundamental or Accounting Measures

- Observations:
  - Based on averages within the 25 different portfolios
  - R squared for accounting metric:
    - » Operating margin = 77%
    - » CV (Operating margin) = 84%
    - » CV (ROE) = 75%
  - Accounting metrics can hide risk
  - Rates of return earned in a well-diversified portfolio perspective.
  - "The *Risk Study* data should not be used in isolation from other considerations about the subject company, its industry, or the general economic environment."

    Cost of Capital, Third Edition, Pratt and Grabowski

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# BPM: Challenging Conventional Wisdom

- Traditional Thought:
  - There are recognized data sources for all elements of risk in the cost of equity (risk-free rate, beta, industry risk premium, equity risk premium, and size premium), <u>EXCEPT the company-specific risk premium (CSRP).</u>
  - Thus, <u>we do not have any data sources that capture all components of TCOE</u>



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# BPM: Challenging Conventional Wisdom

- Unfortunately, despite the widespread use by analysts and appraisers of a company-specific risk premium in a build-up (or CAPM) model, I am not aware of any academic research on the subject, and <u>it remains the realm of the analyst's judgment</u>.  (Cost of Capital, **2nd edition**, Pratt)

- Not true anymore!

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# BPM: Challenging Conventional Wisdom

- Previous articles
    - "Company-specific risk – A **Different** Paradigm: A **New** Benchmark" published in the Spring 2006 edition of *Business Valuation Review*

    - "**Quantifying** Company-specific Risk: A **New Empirical** Framework with Practical Applications" published in the February 2007 edition of *Business Valuation Update*

    - "**Quantifying** Company-Specific Risk: The Authors Answer Your Questions" published in the May and June 2007 editions of *Business Valuation Update*

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# Previous Articles (continued)

- "Company-Specific Risk:  **The Dow 30** v. Private Company USA" published in the September/October 2007 edition of *The Value Examiner*

- "Comparing the Butler-Pinkerton Model to Traditional Methods Under **Four Daubert Criteria**" published in the November 2007 edition of *Business Valuation Update*

- "Butler Pinkerton Model$^{TM}$ Finds Another Application in **SFAS 123R Engagements**" published in the March 2008 edition of *Business Valuation Update*

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# Previous Articles (continued)

- "Two Ways to Use the Butler Pinkerton Model$^{TM}$: **Total Cost of Equity** or Company-Specific Risk?" published in the April 2008 edition of *Business Valuation Update*

- **Quantifying** Company-Specific Risk—Regardless of Your Faith in Beta" published in 2008 Winter Edition of *Business Appraisal Practice*

- The Butler Pinkerton Model$^{TM}$: "**Empirical Support** for Company-Specific Risk" published in the May/June 2008 edition of *The Value Examiner*

- Frequently Asked Questions on www.bvmarketdata.com
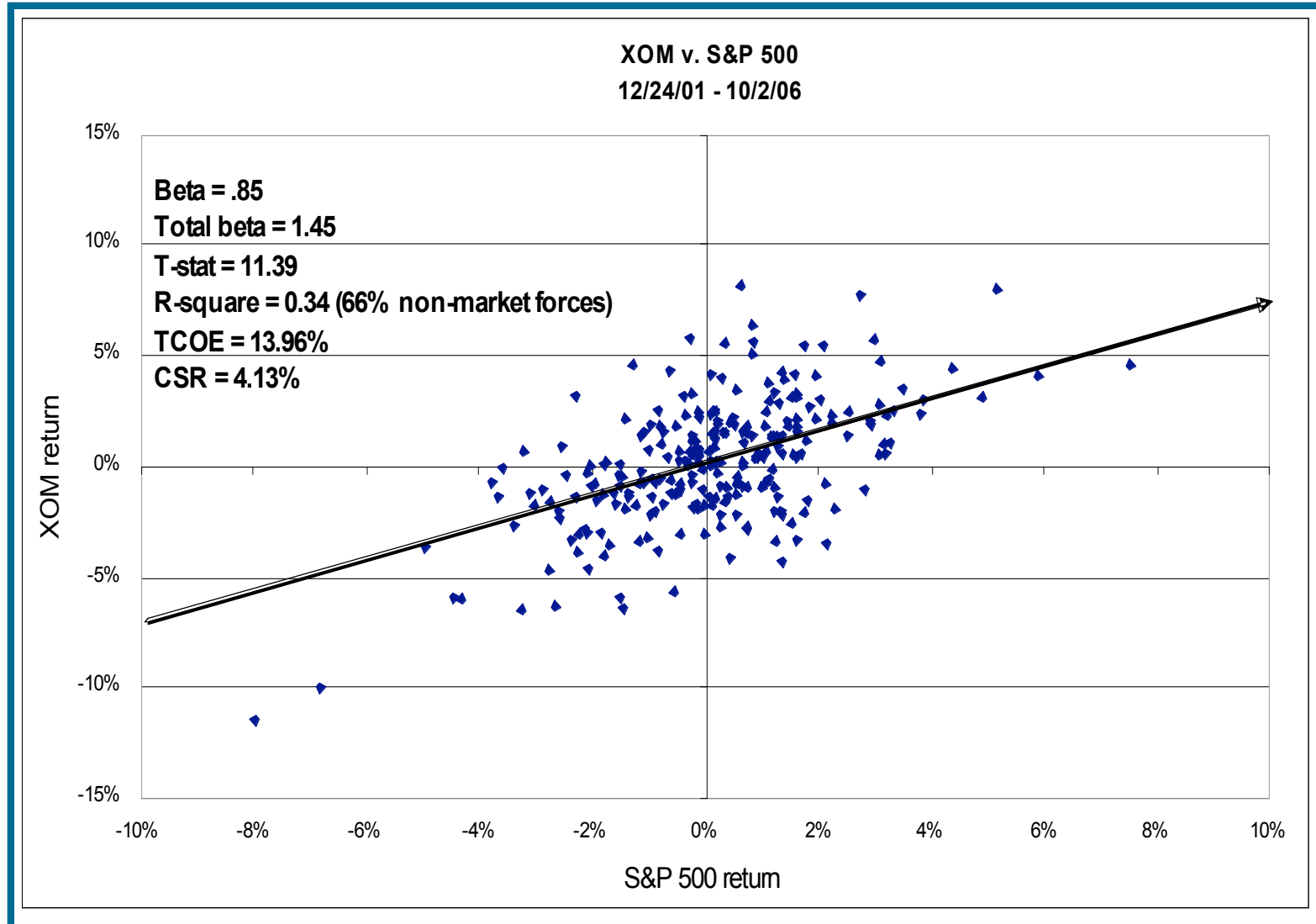
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# Background

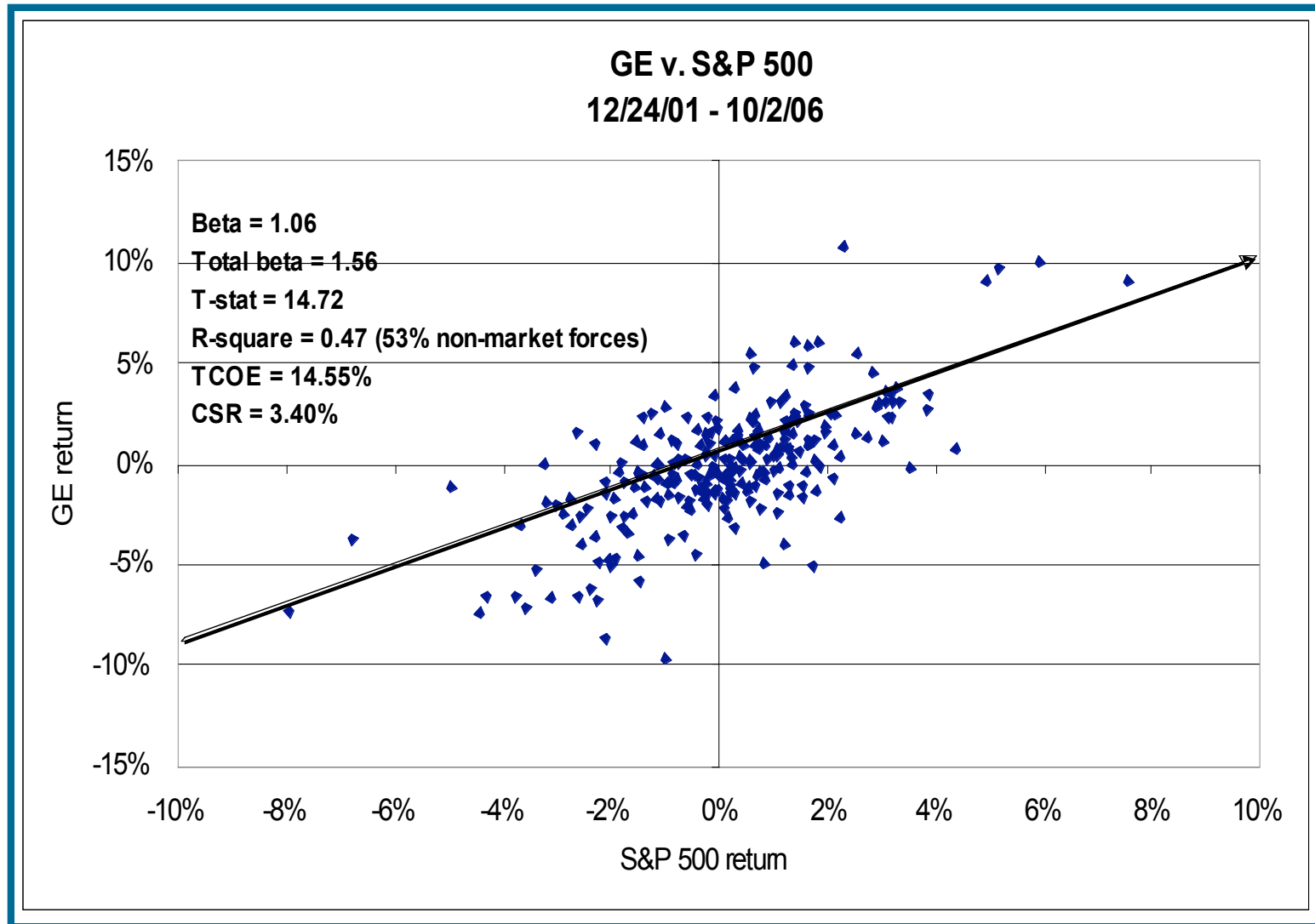Question:  Is it possible that a company can have a negative (less than zero) CSRP?

- Exxon Mobil (Ticker: XOM) exhibited a CSRP = 4.13%

- General Electric (Ticker: GE) exhibited a CSRP = 3.40%

- If these companies have positive CSRPs, can you think of a time when any company should have a negative CSRP?



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# XOM

**XOM v. S&P 500**
**12/24/01 - 10/2/06**

Beta = .85
Total beta = 1.45
T-stat = 11.39
R-square = 0.34 (66% non-market forces)
TCOE = 13.96%
CSR = 4.13%

XOM return

S&P 500 return

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# GE

**GE v. S&P 500**
**12/24/01 - 10/2/06**

Beta = 1.06
Total beta = 1.56
T-stat = 14.72
R-square = 0.47 (53% non-market forces)
TCOE = 14.55%
CSR = 3.40%

GE return

S&P 500 return

# Observations

Compare GE with XOM:

- Market risk (XOM beta = 0.85; GE = 1.06) and CSR (XOM CSRP = 4.13%; GE = 3.40%) are not related

- Traditional method of starting at 0% (artificial and low) as a reference point for CSRPs is incorrect – **Key Conclusion**

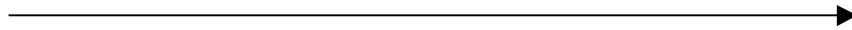- If XOM and GE have positive CSRPs, then all other companies also have positive CSRPs – **Key Conclusion**
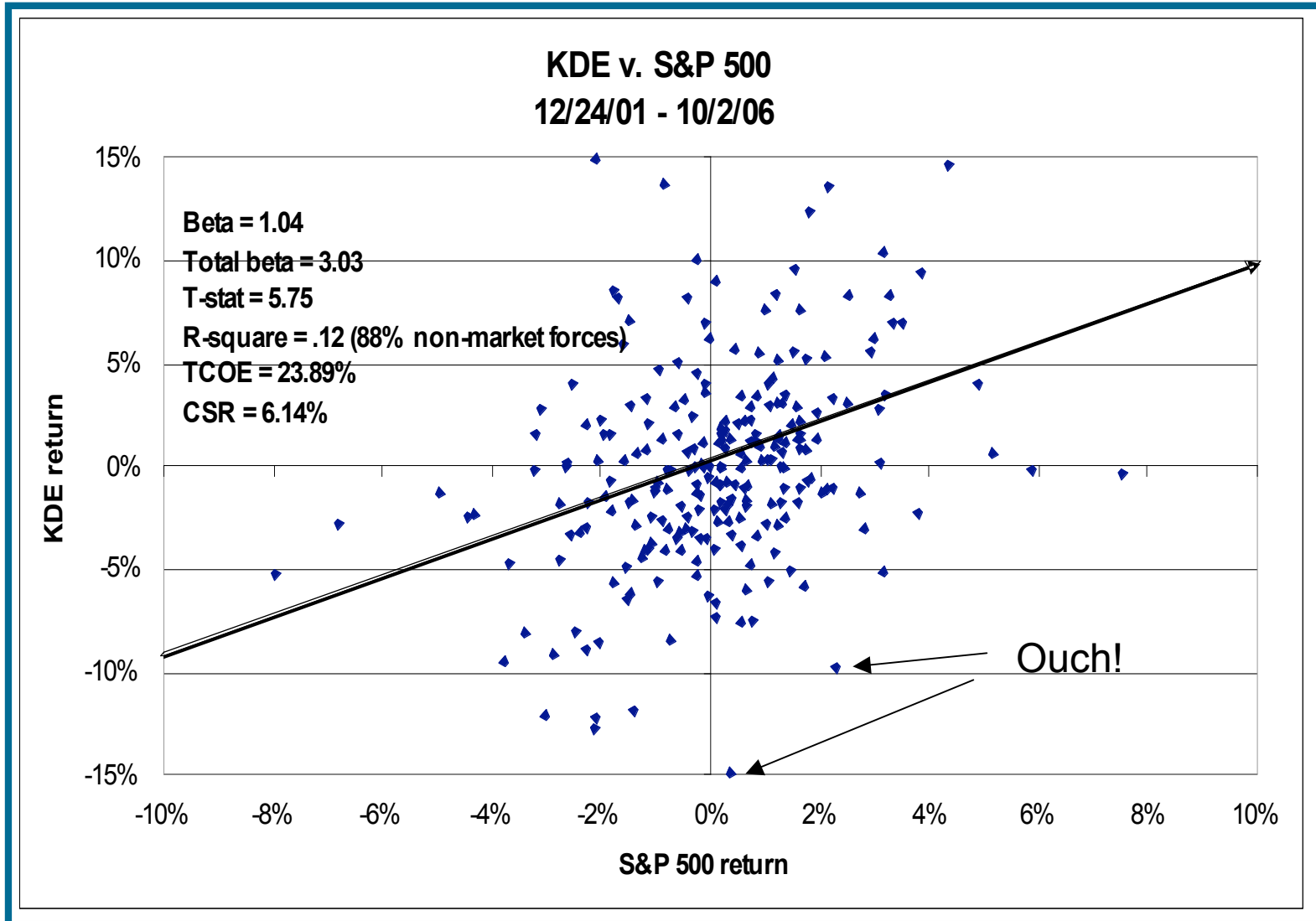
*Quote by Charles Kettering*

- TCOE benchmarks – **Key Conclusion**

*The world hates change, yet it is the only thing that has brought progress.*

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# Support for These "Controversial" Conclusions:
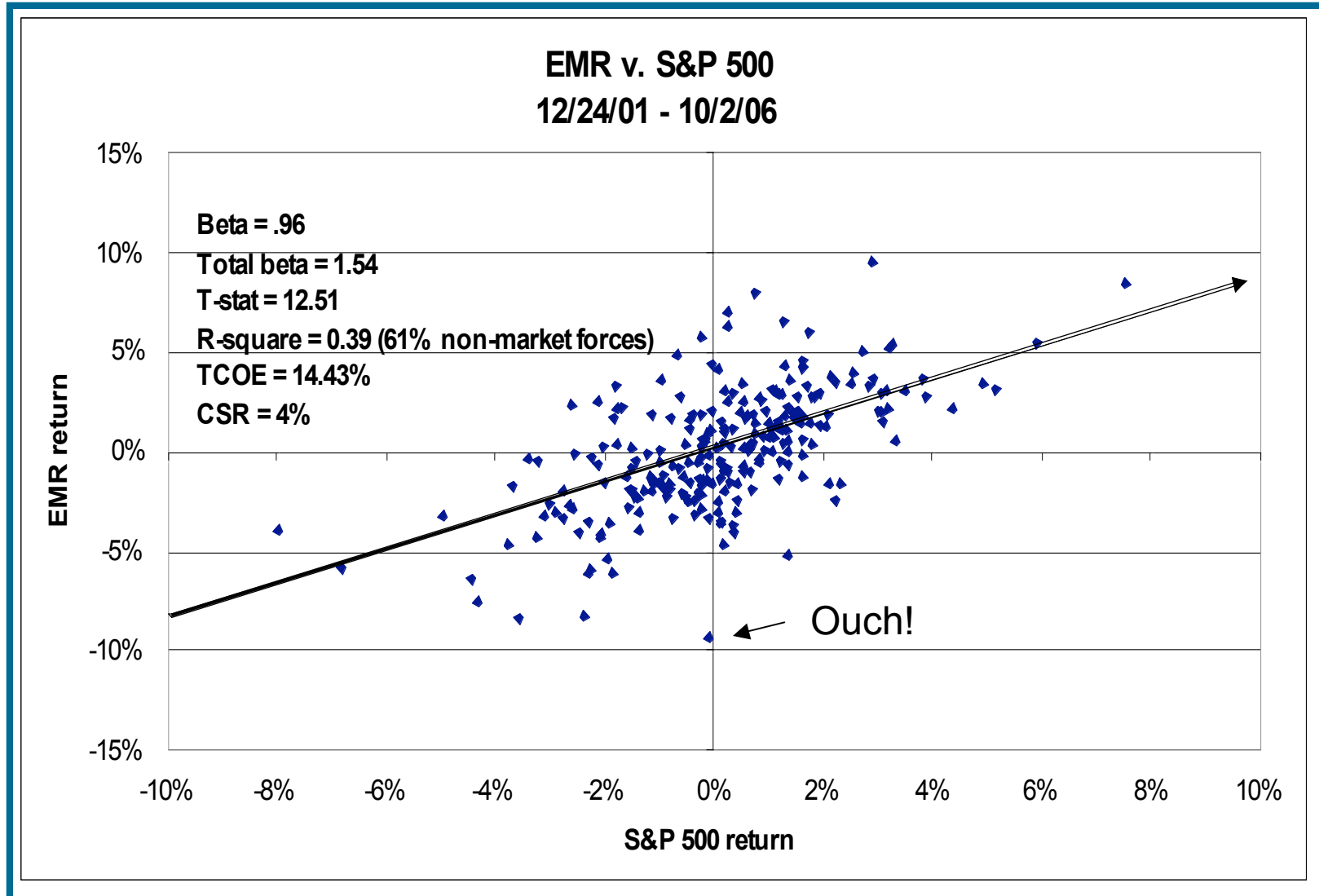
- … when discussing large portfolios, "the weighted average of the unsystematic risk **approaches** zero as the number of equally weighted securities in a portfolio approaches *infinity*"

# KDE



**KDE v. S&P 500**
**12/24/01 - 10/2/06**

Beta = 1.04
Total beta = 3.03
T-stat = 5.75
R-square = .12 (88% non-market forces)
TCOE = 23.89%
CSR = 6.14%

KDE return

S&P 500 return

Ouch!

# EMR

# A Closer Look at the Financial Theory

# Financial Theory

- $\beta = \sigma_{s,m}/\sigma^2_m$

- $\beta = \sigma_{s,m}/(\sigma_m * \sigma_m)$

- $\beta = (\sigma_{s,m}/\sigma_s * \sigma_m) * (\sigma_s/\sigma_m)$

Note: we have merely multiplied the right hand side of the equation by 1 or $\sigma_s/\sigma_s$

- $R = \sigma_{s,m}/(\sigma_s * \sigma_m)$

- $\beta = R * (\sigma_s/\sigma_m)$

- $\beta/R = \sigma_s/\sigma_m$

- **Total Beta = $T\beta = \beta/R = \sigma_s/\sigma_m$**



Appraisal Certificate for

# Total Beta

- T$\beta$ measures the total risk, or volatility, of an individual stock ($\sigma_s$) relative to the total risk, or volatility, of the market ($\sigma_m$)

- The total risk premium must include the risk-free rate, Beta*ERP, the size premium (SP) AND any CSRP

- $\sigma_s$ is the appropriate measure of total risk if it is the only stock in your portfolio

- $\sigma_m$ is the appropriate measure of total risk if the S&P 500 index is the only security in your portfolio



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# Total Beta (continued)

- Tβ **almost always** will be greater than 1.0

- Tβ (total risk) **will always** be greater than β (systematic risk)

  - All data points, or observations, will never fall on the best-fit linear regression line

- Tβ **trumps** all other betas

  - Captures 100% of disclosed risks

  - Same reference point we use for private companies

  - Much more stable than beta

# Other Uses of Total Beta

- Goldman/Bank of America Model:
  - Standard deviation Canada = 15.17%
  - Standard deviation U.S. = 12.64%
  - Relative standard deviation Canada = 15.17/12.64 = 1.2 = **Total Beta**
  - Assume ERP $_{US}$ = 5.0%
  - ERP $_{Canada}$ = ERP $_{US}$ * Total Beta = 5.0%*1.2 = 6.0%

- Duff & Phelps Model:
  - Cost of equity $_{emerging\ market}$ = $R_f$ + ERP $_{US}$* (Standard deviation $_{emerging\ market}$/Standard deviation $_{US}$) + Political Risk Adjustment (optional)

Source - ASA: Center for Advanced Valuation Studies: Roger J. Grabowski, ASA (October 2007)

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# Modified CAPM and Total Cost of Equity (TCOE)



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# TCOE (using Tβ)

## TCOE = $R_f$+ Tβ*ERP



Risk and Return Among Various Ass
1926-2004 with Linear Trendline

# Tβ and β versus Return

**Security Market Line v. Total Beta Line**

(Assumes $R_f$ = 4.84%, ERP = 6.28% and R = .25)

Does the difference matter to investors? *Maybe*

Total Beta Line

$TCOE = r_f + Tβ*ERP$

$COE = r_f + β*ERP$

Security Market Line

*Return*

*Beta*
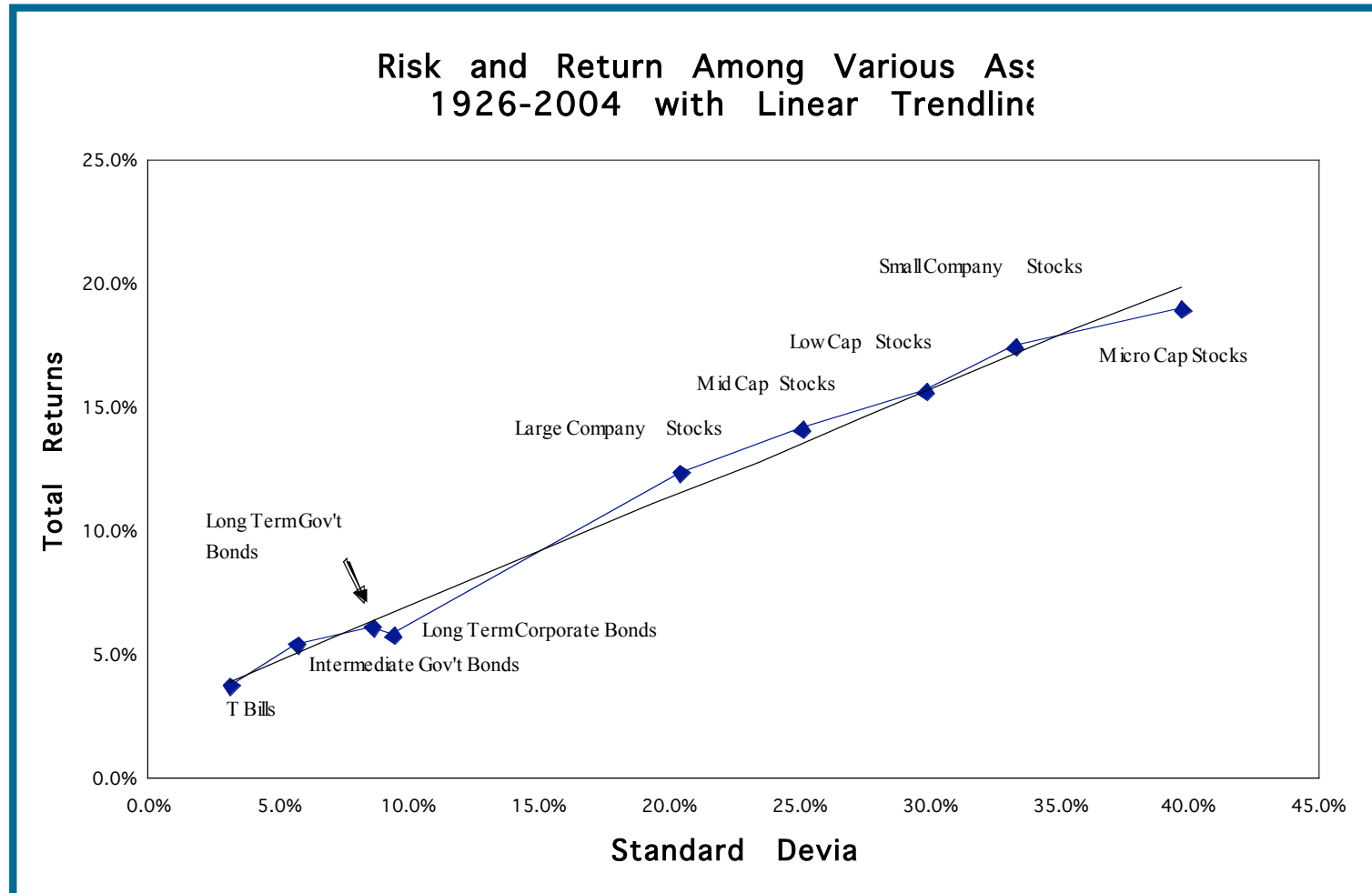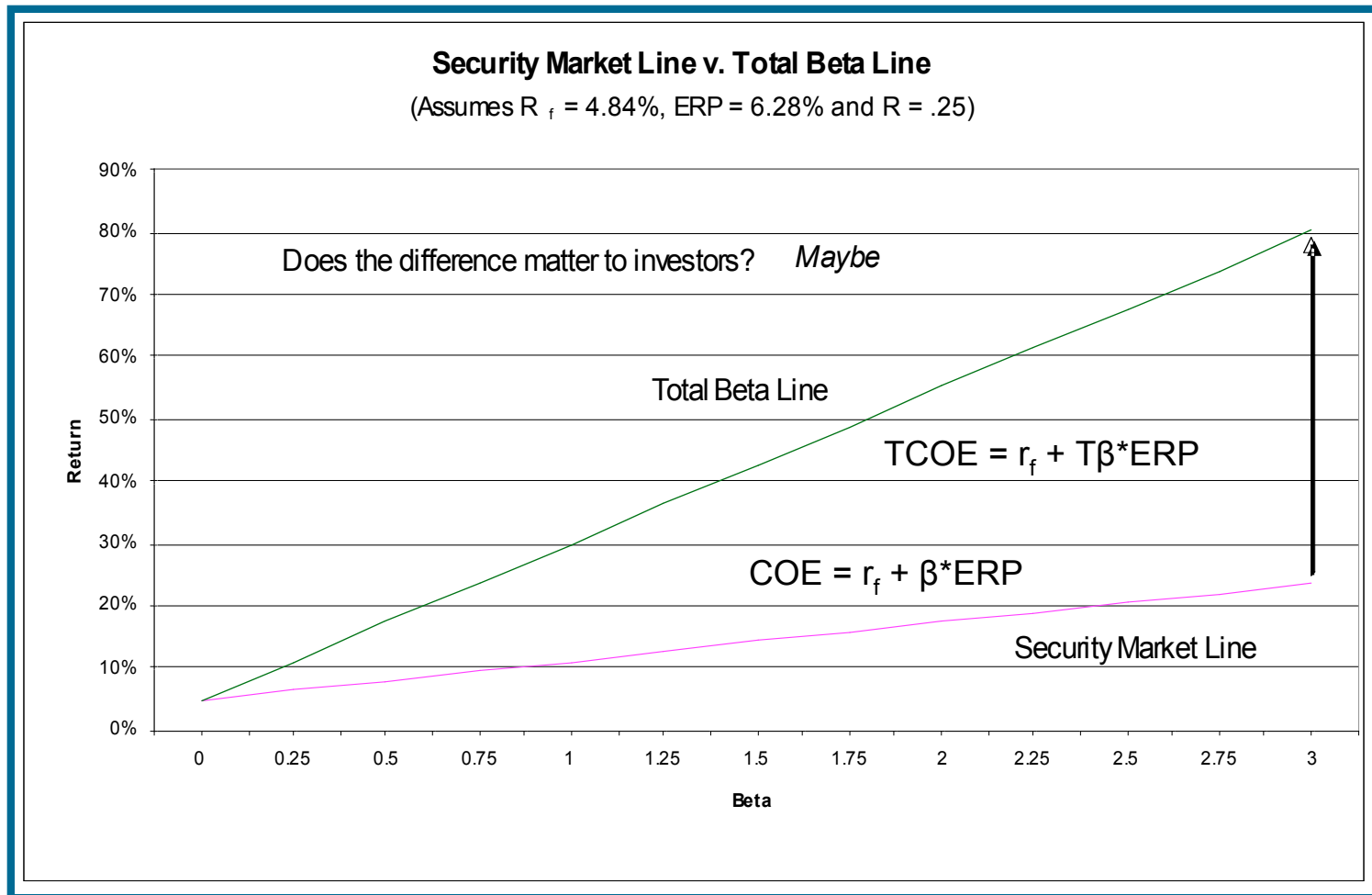
**TCOE = Modified CAPM = $R_f$ + β\*ERP + SP + CSRP**

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# The **Quantification** of CSR!

Solving for the only unknown in the two equations:

Damodaran      CAPM      BPM

- $TCOE = R_f + T\beta*ERP = R_f + \beta*ERP + SP + \textbf{CSRP}$

Modified CAPM

- $CSRP = T\beta*ERP - \beta*ERP - SP$

- **$CSRP = (T\beta - \beta)*ERP - SP$**

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# Is CSR Priced in the Public Markets?

- Goyal and Santa-Clara, "Idiosyncratic Risk Matters!",

  Journal of Finance (June 2003)

  - To the extent that undiversified investors have impact in the market, this should be reflected in pricing of the overall stock market.

  - Found significant positive relation between average stock variance and return on the market.

  - Conclude that total risk, including idiosyncratic risk, drives forecastability of the stock market.

# Is CSR Priced in the Public Markets? (continued)

- The debate is not important for the valuation of private companies (at least for the income approach)
  - It is typically priced for private companies
  - Use publicly-traded benchmarks for guidance

# Indirect Observation of the BPM

- "Owner's Lack of Diversification and the Cost of Equity Capital" written by McConaughy and Covrig (Business Valuation Review – Winter 2007)

  - "… the use of larger and more established public companies, which are not exactly comparable, may understate significantly the volatility of the private companies' cash flows and, thus, understate the risks facing the undiversified entrepreneurial-investor."

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# Indirect Observation of the BPM
(continued)

- "Second, the entrepreneurial investor faces cash-flow risks that may not be represented well by stock price volatilities. Public companies' stock price volatilities many not represent the cash-flow risks faced by the entrepreneurial investor. These companies may experience wild stock price fluctuations. Volatilities estimated from these companies' stock prices may be excessive …"

- "Another benefit of our model is that it does not use a risk measure based on the stock price volatility of market-comparable companies. This avoids the possibly problematic volatility measurements due to excess volatility or inappropriate comparables."

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# Answer

- Are privately-held companies more, or less, volatile than public companies, or is it very much **company-specific**?

- Use BPM to "bracket" your privately-held company, if possible.

- CSR is just that - company-specific.
  - Do not need perfect **comparables**.
  - You need good **guidelines**.  Good is relative and open to interpretation.

- Why ignore the data, if it exists?
  - It is better than essentially guessing

# Indirect Observation of the BPM

- Public and private capital markets are just different. Therefore, appraisers cannot use public market data to help determine valuation in private markets.

- Answer:
    - "It seems likely that the return expectations in both markets are driven, at least in part, by the same economic variables, such as the level of interest rates, economic growth, inflation and oil prices." Source: Are the Public and Private Capital Markets Worlds Apart?, *Business Appraisal Practice*, Winter 2007/2008, M. Mark Walker, PhD, CFA, CBA

# Answer (continued)

- Principles of Alternatives/Substitution also contradicts

- Other publicly-traded stock data we rely upon:
  - Pre-IPO studies
  - Restricted stock studies
  - Closed-end fund data
  - Merger data
  - Other cost of capital components (beta, IRP, SP, ERP)

- "Given the state of private capital market theory and practice, I am reluctant to discard valuation methods simply because they rely on public market data." Source: Are the Public and Private Capital Markets Worlds Apart?, *Business Appraisal Practice*, Winter 2007/2008, M. Mark Walker, PhD, CFA, CBA

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# Answer (continued)

- Revenue Ruling 59 – 60; Section 4.01 (h):
  - The <u>market price of stocks</u> of corporations engaged in the same or a similar line of business having their stocks actively traded in a free and open market, either on an exchange or over-the-counter. (Emphasis added)

# Indirect Observation of the BPM

- CAPM is subject to many unrealistic/impractical assumptions:
  - No taxes
  - No transaction costs
  - All securities are properly priced: The market is perfectly efficient
  - Market:  All investable assets (real estate, art, intellectual property, comic books, etc.)
  - Rates of return are normally distributed
  - Others

# Indirect Observation of the BPM

- *Investment Volatility: A Critique of Standard Beta Estimation and a Simple Way Forward* (working paper – January 2008) written by Dr. Chris Tofallis:
  - Total Beta, a measure of total risk, is a much better alternative to classify stocks as either aggressive or defensive.
  - Market Beta is inherently unstable over time.
  - Thus, one cannot separate total risk into its components – market risk, company-specific and size – as it is too subjective to do so.

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# Answer

- All aware of CAPM/Beta's "warts" – Yet, Nobel-prize winning theory.

- BPM Measures **historical** market beta – not any better (or worse) to project a **forward-looking** market beta
  - Over look-back period, beta is what it was, so-to-speak
  - Two benefits of the BPM Calculator:
    - 1) Give careful consideration to the look-back period as well as to the day of the week
    - 2) T-stat and statistical significance greater than 80%

- Believe it is important to know why (to the best of our ability) total risk is what it is.

- By definition: Total Beta = Beta/R

- Corrected Total Beta using Sum Beta/R?

# Direct (and Incorrect) Criticism of BPM

- "The Emperor's New Clothes: Quantifying Risk in the Private Company" (January/February edition of The Value Examiner) by William H. McAfee, Jr., CFP, AVA.

  - "BPM **does not provide anything** that was not previously available to an analyst using the guideline public company method with multiples since the inverse of the multiple shows the relative risk of the examined company."

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# Answer

- Statement is not correct.

- Inputs to BPM: XOM
    - Risk-free rate = 5.00%
    - ERP = 5.00%
    - Market proxy: S&P 500
    - Look-back period: 5 years
    - Effective date: 3/7/08
    - Size premium = -0.27%

- Outputs:
    - TCOE = 12.79%
    - CSRP = 3.59%

# Answer (continued)

- Dividend discount model: $P_0/E_1 = D_1/E_1/(k - g)$

- Inputs:
    - $P_0$ = $82.49/share (As of 3/7/08)
    - $E_1$ = $8.07/share (YE 12/08 – Yahoo!Finance)
    - $P_0/E_1$ = 10.22
    - $D_1$ = $1.40/share (last year) * 7% growth = $1.50/share
    - $D_1/E_1$ = 0.1856
    - g = growth rate of dividends = 7%

- Solve for the only unknown: k
    - k = 8.80%

- Compare to BPM
    - k = 12.79%
    - Difference due to CSR!
    - The inverse of the P/E ratio does not capture TCOE or CSR.

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# Direct Criticism: Application and Answer

- VPS Webinar: *Cost of Capital: A Consensus View?*

- While generally complimentary ("Slick Tool"), the following comment was made (words to the effect):
  - From a practical perspective, you must be careful with the BPM relative to the market approach.

- This has always been the case:
  - "The best estimate of (beta) may be derived from the guideline companies used in the market approach, or may be derived from Ibbotson's Cost of Capital Quarterly." Source: Editor's Column – *Business Valuation Update* September 1998

# Answer (continued)

- Another indication of value
  - Good thing
  - Different perspective
  - May want to use more **guidelines** in the income approach
  - Have used the BPM and excluded the market approach: the publicly-traded company method
  - CSR is just that – company-specific

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# Answer (continued)

- As shown, public market multiples do not fully incorporate CSR.

- Total beta and BPM fully capture CSR!

- Must consider in the market approach:
  - Market multiple may incorporate some, but definitely **not all**, of CSR.

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# Direct Criticism: Too Much Rigor

- Letter to the editor of The Value Examiner written by Warren Miller:

  - "They appear to be trying to impose rigor on something that is inherently a matter of professional judgment: unsystematic risk."

  - "Messrs. Butler and Pinkerton seem to believe that numbers = rigor. The question, it seems to me, is the one we so often face in this field: would we rather be precisely wrong or approximately right? The latter choice is inherently difficult for those with little, if any, tolerance for ambiguity. Yet, that is what professional judgment is all about."

# Answer

- Numbers most certainly improve rigor!

- Professional judgment is alive and well with the BPM.

- Old way = approximately wrong or right – who really knows?

- BPM: Approximately right



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# Direct Criticism: Robotic Technique and Answer

"Monkeys do formulas, appraisers use judgment"

*Comment made in the* VPS Webinar *"Cost of Capital: A Consensus View?"* February 27, 2008

No, they don't.  Monkeys just aren't that smart….

Practical example

**See?**

# Criticisms of CAPM or BPM?

- Pratt/Grabowski at Cost of Capital Conference in New York on 10/17/08

- "(BPM) assumes that beta estimate is accurate.  If not, then CSRP is not really the CSRP, but includes elements of beta correction plus CSRP"
  - This is a CAPM criticism.  If you accept CAPM, BPM's math is **irrefutable**.
  - True observation, but is it a material observation?
  - No one knows the "true" beta.
  - No need to perform beta "correction" (unless stock traded in an inefficient market) in search of "true" beta.

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# Extreme Example: Low (and very unstable) Beta

| | Beta | Systematic Risk | Total Beta | TCOE | CSRP |
|---|---|---|---|---|---|
| | | | Dnacq Healthcare (DYII) | | |
| Around 1/23/08 | | | | | |
| Monday | 0.34 | 1.70% | 10.72 | 57.92% | 44.98% |
| Tuesday | 1.18 | 5.90% | 11.60 | 62.32% | 45.20% |
| Wednesday | 0.60 | 3.00% | 12.05 | 64.56% | 50.35% |
| Thursday | 0.60 | 3.00% | 12.93 | 68.95% | 54.70% |
| Friday | -0.47 | -2.35% | 11.92 | 63.88% | 55.02% |
| Min | -0.47 | -2.35% | 10.72 | 57.92% | 44.98% |
| Max | 1.18 | 5.90% | 12.93 | 68.95% | 55.02% |
| Range | 1.65 | 8.25% | 2.21 | 11.03% | 10.04% |
| Mean | 0.45 | 2.25% | 11.84 | 63.53% | 50.05% |
| Median | 0.60 | 3.00% | 11.92 | 63.88% | 50.35% |
| SD | 0.60 | 3.00% | 0.80 | 3.98% | 4.89% |
| **CV** | **1.33** | **133.17%** | **0.07** | **6.27%** | **9.77%** |

**For low beta stocks, how important is it to get beta correct?  (Not very important!)
You better get the TCOE and CSRP correct though!**

BPM: A New Approach to CSR

# Total Risk = TCOE = 64.58%

If the pie is the pie, do we necessarily care how the pie is sliced-up?
I like to try (the BPM).  If I am wrong on the slices, I am still right on the pie!



$r_f$ = 4.3%

Beta*ERP = 3.0%

SP = 6.93%

CSRP = 50.35%

Even if beta is "incorrect", total beta captures 100% of disclosed risks.  CSR picks
up beta's "slack" for a stock that traded in an efficient market.

BPM: A risk allocator; If do not want to allocate, just key in on TCOE

BPM: A New Approach to CSR
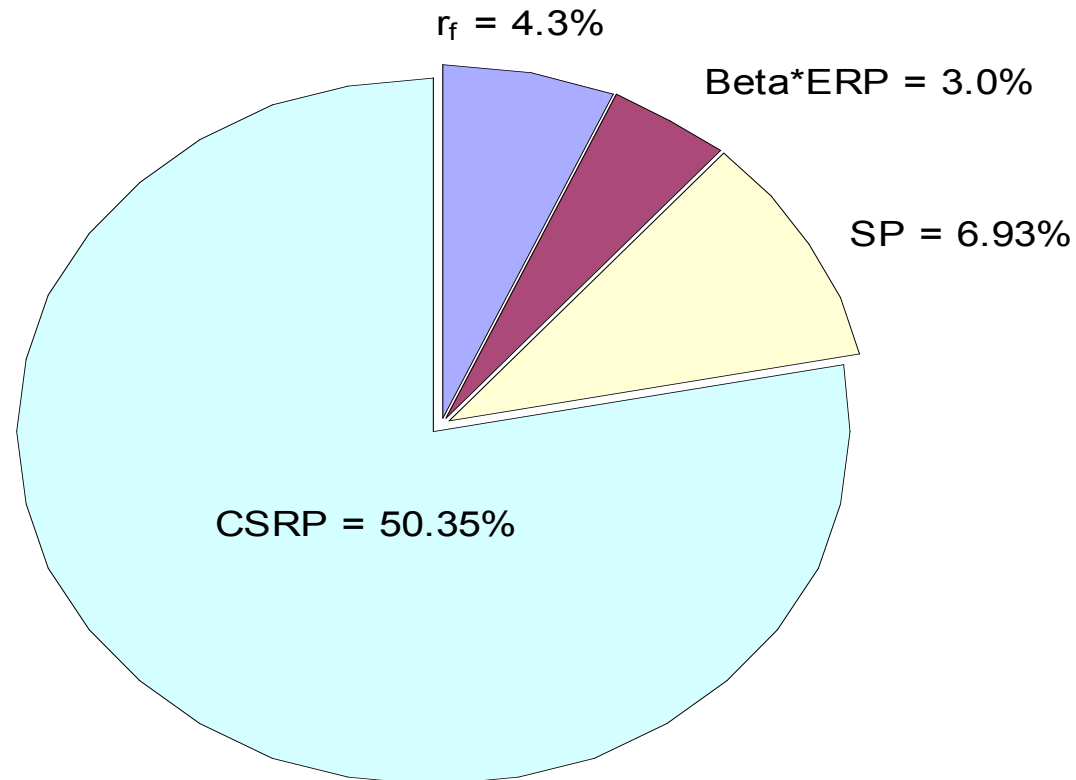
# Extreme Example: High Beta

| Dryships (DRYS) | | | | | |
|---|---|---|---|---|---|
| | | Systematic | | | |
| | Beta | Risk | Total Beta | TCOE | CSRP |
| | | | | | |
| Around 11/13/08 | | | | | |
| | | | | | |
| Monday | 2.88 | 17.28% | 4.33 | 31.00% | 6.16% |
| Tuesday | 2.52 | 15.12% | 4.70 | 33.19% | 10.48% |
| Wednesday | 2.41 | 14.46% | 4.39 | 31.33% | 9.30% |
| Thursday | 2.31 | 13.86% | 4.25 | 30.49% | 9.10% |
| Friday | 2.18 | 13.08% | 3.93 | 28.56% | 7.94% |
| | | | | | |
| Min | 2.18 | 13.08% | 3.93 | 28.56% | 6.16% |
| Max | 2.88 | 17.28% | 4.70 | 33.19% | 10.48% |
| | | | | | |
| Range | 0.70 | 4.20% | 0.77 | 4.63% | 4.32% |
| | | | | | |
| Mean | 2.46 | 14.76% | 4.32 | 30.91% | 8.60% |
| Median | 2.41 | 14.46% | 4.33 | 31.00% | 9.10% |
| | | | | | |
| SD | 0.27 | 1.60% | 0.28 | 1.66% | 1.63% |
| **CV** | **0.11** | **10.82%** | **0.06** | **5.38%** | **18.99%** |
| | | | | | |
| **For high beta stocks, how important is it to get beta correct?  (More important, but not as important as TCOE!)** | | | | | |

BPM: A New Approach to CSR

# Total Risk = TCOE = 31.12%

If the pie is the pie, do we necessarily care how the pie is sliced-up?
I like to try (the BPM).  If I am wrong on the slices, I am still right on the pie!



$r_f$ = 5.00%

CSRP = 9.10%

SP = 2.56%

Beta*ERP = 14.46%

Even if beta is "incorrect", total beta captures 100% of disclosed risks.  CSR picks
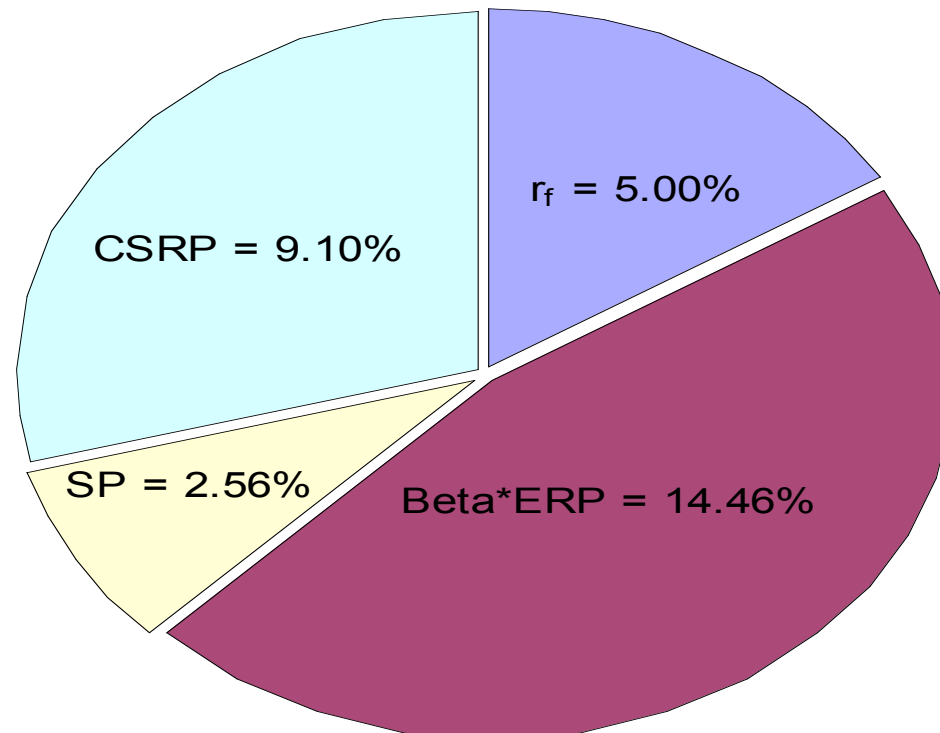up beta's "slack" for a stock that traded in an efficient market.

BPM: A risk allocator; If do not want to allocate, just key in on TCOE

BPM: A New Approach to CSR

# Direct Criticism: Alleged "Subjectivity" of the BPM

- Total Beta = beta/R = 1.89/0.374 = 5.05; if 1.89 is "true" beta?

- Beta standard error = 0.62

- Beta range: 1.89 +/- (2*0.62) = 0.65 – 3.13
  - Why would you ever pick a beta +/- 2 standard deviations from the mean as the "true beta"?



BPM: A New Approach to CSR

# Alleged "Subjectivity" of the BPM (continued)

- Total beta range = 0.65/.374 = 1.74 (Low); 3.13/.374 = 8.40 (High)

  - Does this make any sense?
  - Total beta = 1.74 is less than the best-fit beta = 1.89
  - Given the stability of total beta, 1.74 – 8.40, is simply not realistic
  - Beta = R*standard deviation$_s$/standard deviation$_m$
  - Since we know Total beta is relatively stable, the "true beta's" R most likely will not be 0.374.  Each beta, whether "true" or not, has its own theoretical R rather than a constant 0.374, for example.
  - Otherwise, you implicitly assume that the stock's historical volatility was too little or too much.  To make this assumption, you must assume the market for the stock was inefficient.  Just ignore, if inefficient.

# Direct Criticism: Double Counting?

- Pratt/Grabowski at Cost of Capital Conference in New York on 10/17/08

- "Does the BPM double count financial risk"?
  - No, financial risk impacts both systematic as well as CSR risk.
  - Review capital structures of guidelines as well as subject company.
  - Do not consider much differently than analyzing customer concentration risk and supplier concentration risk, for example.

# New Application: 123R

- Output of Calculator
  - Total Beta of comparable = 2.57
  - Weekly standard deviation = 0.0431

- $T\beta = \sigma_s/\sigma_m$

- $\sigma_m = 0.0431/2.57 = 0.0168$ = weekly standard deviation

- $\sigma_m = 0.0168*52^{.5} = 12.09\%$ = annual standard deviation

- $TCOE_{private} = R_f + T\beta*ERP$

- $28.7\% = 4.7\% + (\sigma_s/12.09\%)*5\%$

- $24.0\% = \sigma_s*0.4136$

- $58.0\% = \sigma_s$

# Case Study: Microbreweries

As highlighted in February 2007 **BVU** article entitled, "Quantifying Company-Specific Risk: A New, Empirical Framework With Practical Applications"

# Brewery No. 1: SAM (Boston Beer)



**SAM v. S&P 500**
**12/24/01 - 10/2/06**

Beta = 0.73
Total beta = 2.38
T-stat = 5.03
R-square = 0.09 (91% non-market forces)
TCOE = 19.78%
CSR = 7.62%

Ouch!
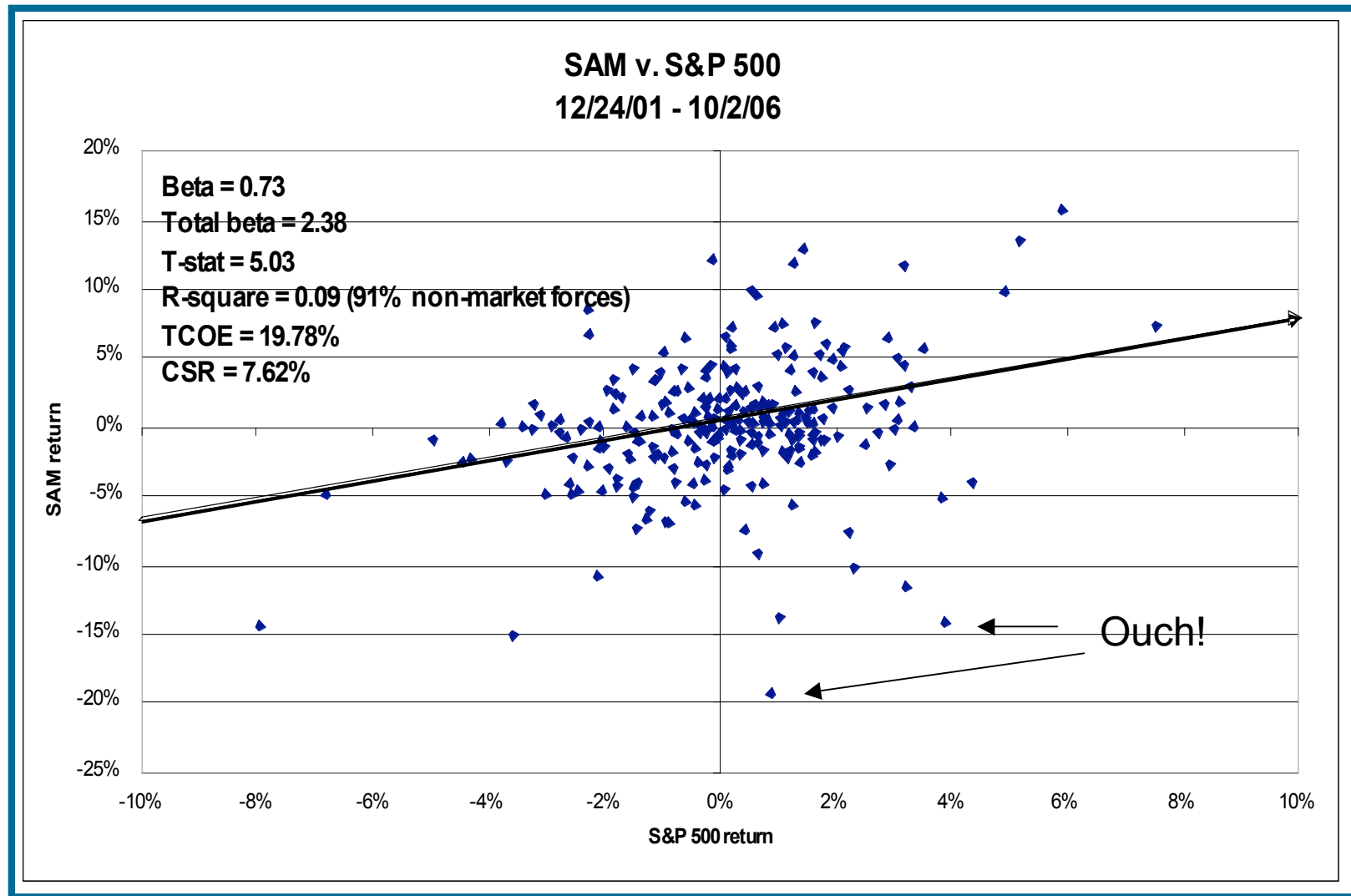
# Brewery No. 2: HOOK (Red Hook)

**HOOK v. S&P 500**

**12/24/01 - 10/2/06**

Beta = 0. 36

Total beta = 3.55

T-stat = 1.62

R-square = 0.01 (99% non-market forces)

TCOE = 27.13%

CSR = 13.65%

HOOK return

S&P 500 return

Ouch!
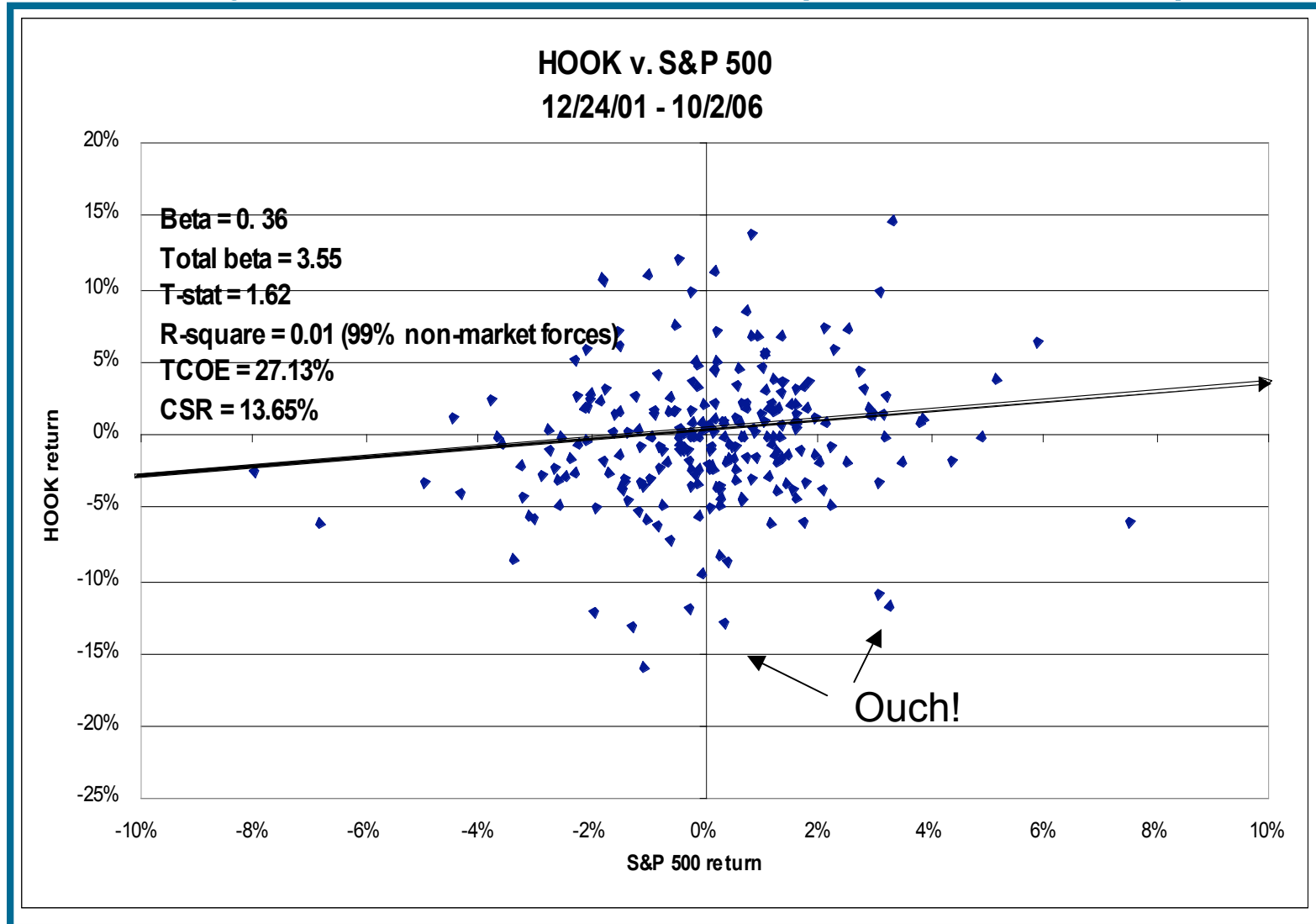
# Brewery No. 3: PMID (Pyramid Breweries)

**PMID v. S&P 500**

**12/24/01 - 10/2/06**

Beta = 0.19
Total beta = 1.99
T-stat = 1.53
R-square = 0.01 ( 99% non-market forces)
TCOE = 17.33%
CSR = 4.93%

Ouch!

PMID return

S&P 500 return

BPM: A New Approach to CSR
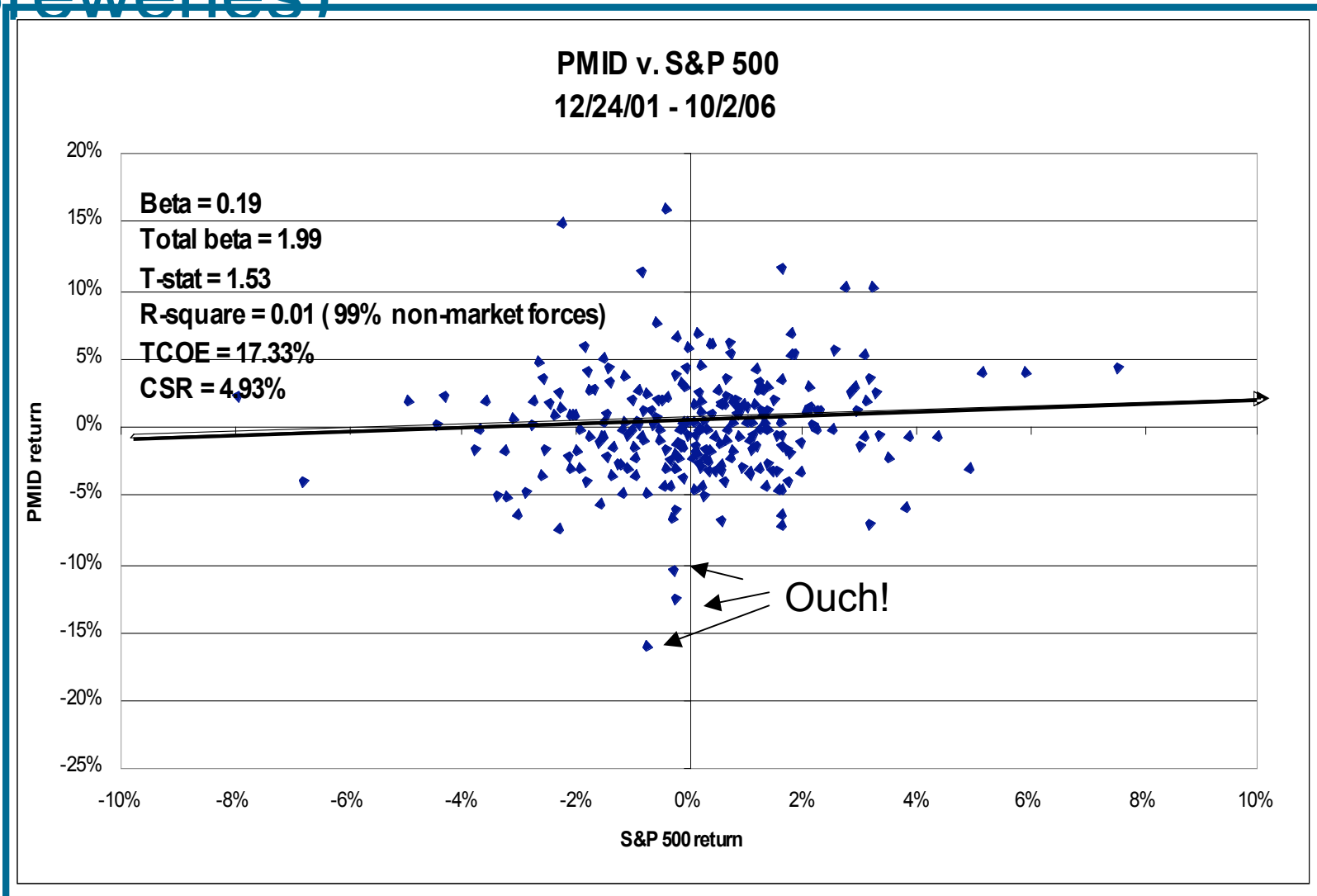
# Inputs to Calculate CSR

- Risk-free rate = 4.84%

- ERP = 6.28%

- Size premium:
  - SAM = 2.76%
  - HOOK = 6.36%
  - PMID = 6.36%
  - Subject: Boise Brewery = 6.36%

- Market proxy: S&P 500

- Look-back period: 12/24/01 – 10/2/06

# Identifiable Company-Specific Risk Factors

- Eliminate factors more highly correlated with size

    – While the size premium captures many risks, the appraiser must be careful to capture total risk and at the same time avoid double-counting

- Ignore macro-economic and industry factors since the β (systematic risk) captures these factors

# Ranking of Company Specific Risk Factors

| | Most Risk | Moderate Risk | Less risk | Least Risk |
|---|---|---|---|---|
| **Factors affecting risk premium:** | | | | |
| Product line diversification | BB | HOOK | SAM | PMID |
| Brewery location (company owned) | BB | HOOK | PMID | SAM |
| Brewery location (under contract) | BB/HOOK | | PMID | SAM |
| Distributors | HOOK | BB | PMID | SAM |
| Location of sales | BB | PMID | HOOK | SAM |
| Supplier | | No meaningful differences | | |

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# Ranking of Company Specific Risk Factors (continued)

| | Most Risk | Moderate Risk | Less risk | Least Ris |
|---|---|---|---|---|

Factors affecting risk premium:

| | Most Risk | Moderate Risk | Less risk | Least Risk |
|---|---|---|---|---|
| Foreign currency exposure | SAM | PMID | | BB/HOOK |
| Trademarks | | No meaningful differences | | |
| Litigation | SAM | HOOK/PMID | | BB |
| Management depth | BB | SAM | | PMID/HOOK |
| Quality and stability of earnings | BB | HOOK | PMID | SAM |
| Access to capital | BB | HOOK | PMID | SAM |

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# Ranking of Company Specific Risk Factors (continued)

| Factors affecting risk premium: | Most Risk | Moderate Risk | Less risk | Least Risk |
|---|---|---|---|---|
| Exposure to variable rate debt | HOOK | PMID | BB | SAM |
| Subject to dilution from options | SAM | HOOK/PMID | | BB |
| Unique Regulation | HOOK | PMID | BB | SAM |
| Subject to paying earn-out | PMID | | | BB/SAM/HOOK |
| Net operating loss carry forwards | HOOK | PMID | SAM | BB |
| Controls and procedures | PMID | BB | | SAM/HOOK |

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# Summary of Company Specific Risk Factors

| | | Most Risk | Moderate Risk | Less risk | Least Risk |
|---|---|---|---|---|---|

→

Summary:/Distribution of Rankings

| | | Most Risk | Moderate Risk | Less risk | Least Risk |
|---|---|---|---|---|---|
| BB | **(?%)** | 7 | 2 | 2 | 5 |
| HOOK | (13.7%) | 5 | 6 | 1 | 4 |
| PMID | (4.9%) | 2 | 7 | 5 | 2 |
| SAM | (7.6%) | 3 | 1 | 2 | 10 |

BPM: A New Approach to CSR

# Output: Determination of TCOE and CSR for Guidelines and Subject

| Ticker | Beta$_L$ | Debt | Equity | Beta$_U$ | Tβ | TCOE | CSRP |
|---|---|---|---|---|---|---|---|
| SAM | 0.73 | $0 m | $458 m | 0.73 | 2.38 | 19.8% | 7.6% |
| HOOK | 0.36 | $5.0 m | $32 m | 0.33 | 3.55 | 27.1% | 13.7% |
| PMID | 0.19 | $8.2 m | $23 m | 0.16 | 1.99 | 17.3% | 4.9% |
| Subject | 0.51 | | | 0.41 | | **25.4%**<br>Conclusion | **11.0%**<br>Conclusion |

BPM: A New Approach to CSR

# Another Look at Breweries: Including BUD

| Ticker | Beta$_L$ | Tβ | TCOE | CSRP |
|---|---|---|---|---|
| SAM | 1.03 | 2.57 | 17.9% | 5.0% |
| HOOK | 0.09 | 3.63 | 23.2% | 11.4% |
| PMID | 0.21 | 3.00 | 20.0% | 7.6% |
| **BUD** | **0.51** | **1.09** | **10.4%** | **3.3%** |

Risk-free rate = 5.0%; ERP = 5.0%; Market proxy = S&P 500; SP = 2.76% (SAM), 6.36% (PMID and HOOK), and -.36% (BUD), 5-year look-back as of 12/10/07; Non-dividend adjusted

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# Observations,
# Issues & Thoughts

# TCOE v. CSRP

- Systematic/Industry risk factors' effect on each company:
  - General economic conditions
  - General trend in alcohol consumption
  - Increased competition from wine and spirit companies
  - Impact of growth of less-filling beers versus traditional beers
  - Craft beers versus "blue collar" beers
  - Quantity and quality of all hop varieties/barley varieties
  - Glass and aluminum pricing
  - Alcoholic beverage regulation and taxation

BPM: A New Approach to CSR

# TCOE v. CSRP (continued)

- Systematic/Industry risk factors' effect on each company:
  - Environmental regulation
  - Potential for increased energy costs (higher transportation, freight and operating costs)
  - Impact of seasonality of operations
  - Dram shop laws
  - Impact from foreign competition
  - Others



BPM: A New Approach to CSR

# Use with BUM: SIC code 3564

**BUM**

- Total Cost of Equity (TCOE) =

  » Risk-free rate ($R_f$) =                    4.66%

  » + Equity risk premium (ERP) =   5.00%

  » + Industry premium =                -0.85%

  » + Size premium (SP) =                <u>5.82%</u>

  » <u>                                                      14.63%</u>

  » **+ CSRP** =                                <u>?%</u>

  » <u>                                                      **?%**</u>

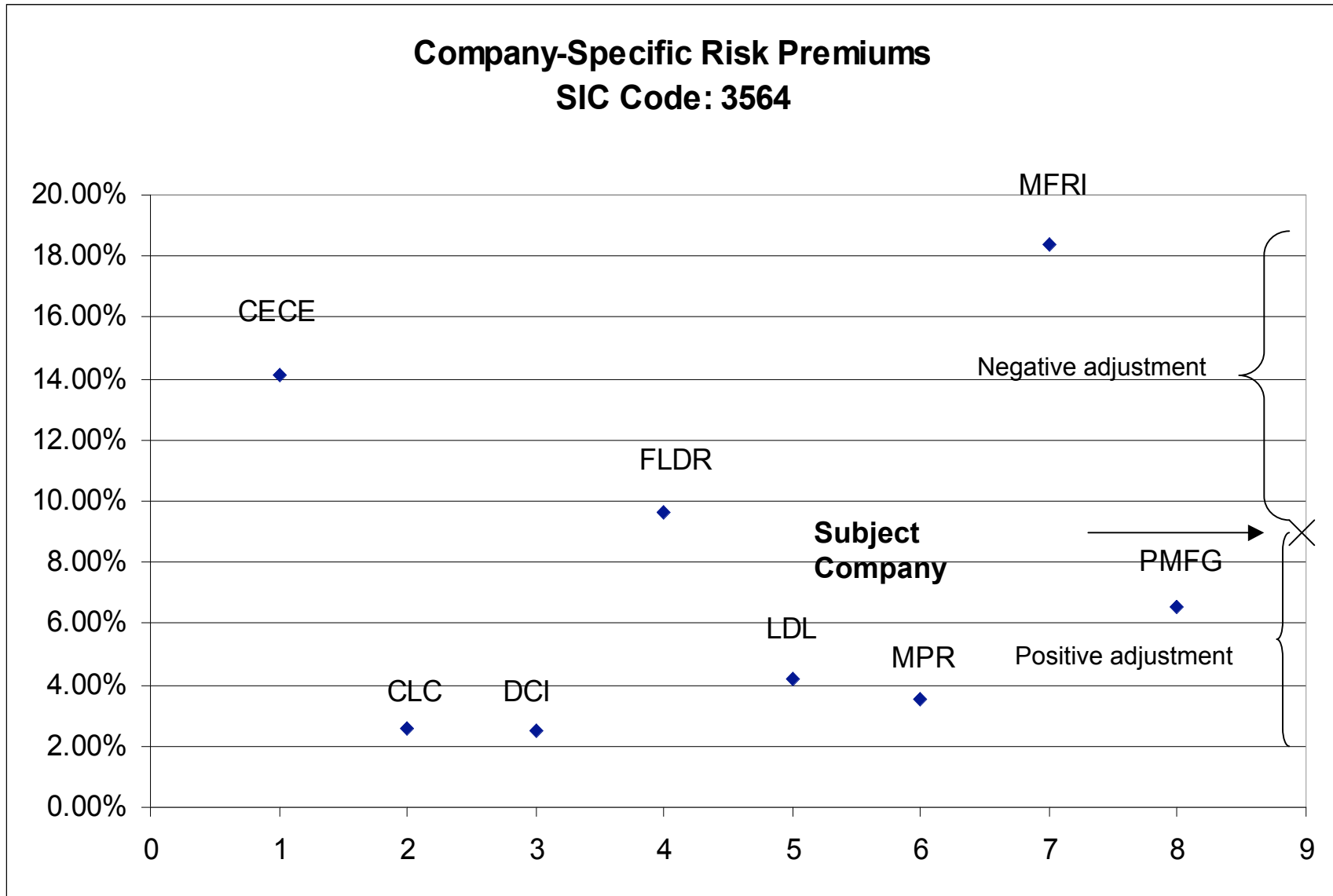# Use with CAPM: SIC code 3564

## CAPM

- Total Cost of Equity (TCOE) =

Risk-free rate ($R_f$) = 4.66%

» + Equity risk premium (ERP) x Beta = 5.00%*0.86

» + Size premium (SP) = <u>5.82%</u>

» _____ 14.78%

» **+ CSRP =** <u>?%</u>

» <u>**?%**</u>

Wouldn't you like to know the CSRPs for each of the guideline companies used in either the BUM or modified CAPM methods?

**BPM provides the answers!**

**Company-Specific Risk Premiums**
**SIC Code: 3564**

BPM: A New Approach to CSR

# Reasonableness Check or Direct Observation?



**Total Cost of Equity
SIC Code 3564**
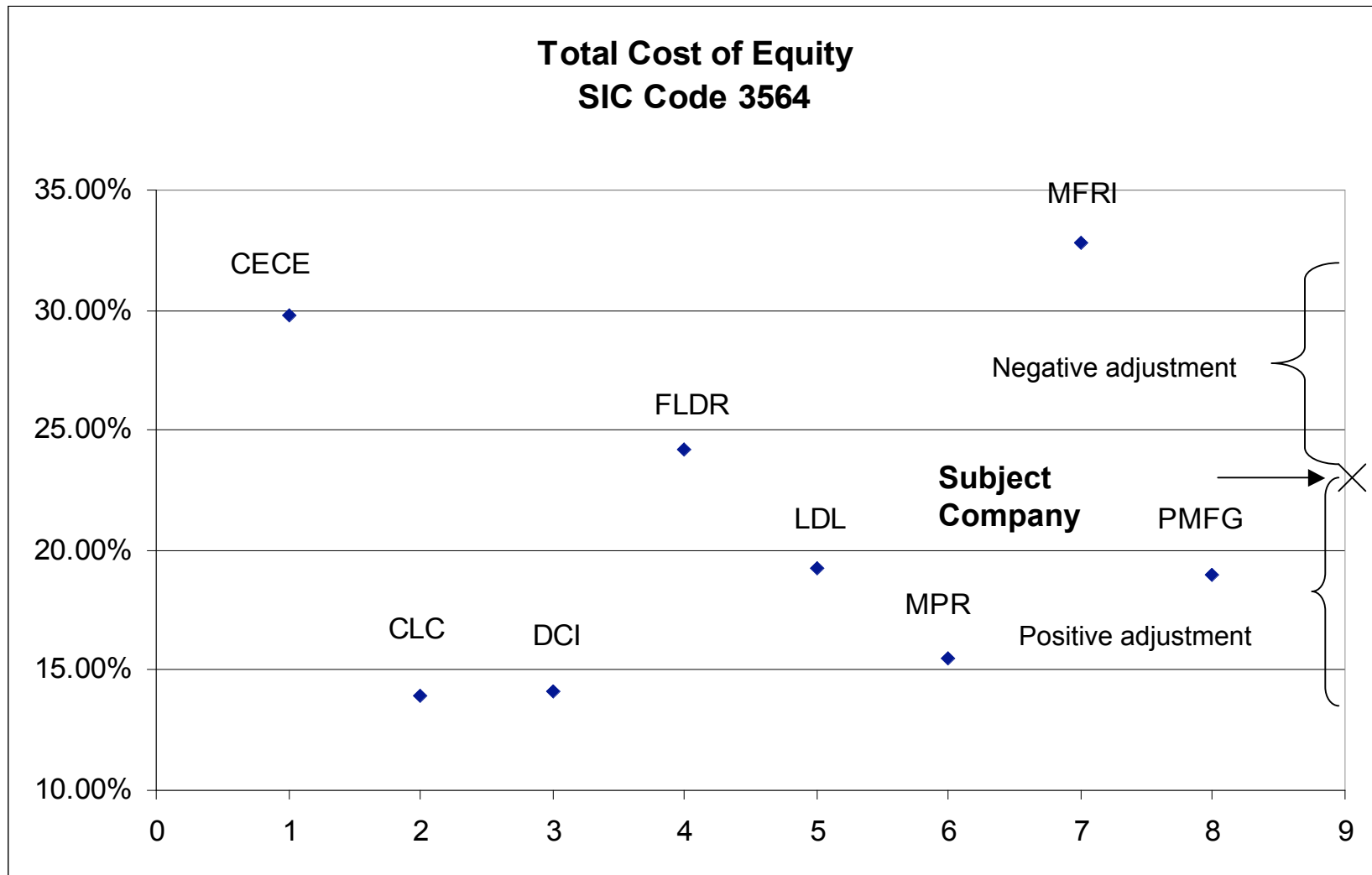
# Use with BUM versus CAPM

- If you go through the process of selecting guidelines, why not use their betas (measure of central tendency or some other logical selection)?

- Industry risk premium is affected by leverage

- SBBI comes out annually; One can calculate TCOE and CSRP as of the date of value for specific benchmarks

# Good Comparables or Good Guidelines?

- This is the Income Approach to valuation – not the Market Approach
  - Have you ever not performed the income approach because you could not find any guidelines?

- "Bad" **comparables** may be "good" **guidelines – Key Conclusion**
  - Company-specific risk is just that – Company-specific
  - Search for customer concentration risk
  - Does BUD give guidance for a private brewery CSRP? (Maybe)

- Potential issue with the market approach?
  - Market multiples (well-diversified perspective)
  - Total Beta (stand-alone perspective)

BPM: A New Approach to CSR

# Court Decisions

- Estate of James Waldo Hendrickson v. Comm of Internal Revenue, TCM 1999-278
    - The Court commented that CAPM was not appropriate for the valuation of small closely held companies and <u>found that CAPM does not address unsystematic risk</u>.

# The Courts Want Empirical Data

- Delaware Open MRI Radiology Associates v. Howard B. Kessler, et al (continued)

  – *"Petitioners' expert's own analysis also contains a* <u>*subjective specific risk premium of 2%,*</u> *the quantification of which cannot be explained by reference to objective factors. I will not quibble with including the factor, which reinforces the conservatism of (petitioners' expert's) final cost of capital."*

- Bankruptcy case decided January 18, 2007

  – One expert used zero company-specific risk, one expert used about 2%, and one expert used 6%. The court case cut the 6% to 4%, stating that <u>"(the witness) could provide little explanation of the basis for making such a significant adjustment to the discount rate</u>."

# The Courts Want Empirical Data (continued)

- Estate of Deputy v. Comm. (TCM 2003-176)
  - *"<u>The taxpayer's expert's figures are without empirical support or explanation and appear to be purely subjective</u>."* (Emphasis added)

- Delaware Open MRI Radiology Associates v. Howard B. Kessler, et al
  - *"To judges, <u>the company specific risk premium often seems like the device experts employ to bring their final results into line with their clients' objectives</u>, when other valuation inputs fail to do the trick."* (Emphasis added)

# Daubert Criteria

| Criteria | BPM | Factor Models |
|---|---|---|
| Subject to testing? | **Yes** | **No** |
| Peer Review/Publication? | **Yes**: 1) Referenced in new <u>Cost of Capital, Third Edition</u>; 2) CAVS seminar; 3) Writing an e-book in collaboration with Morningstar/Ibbotson; 4) Others speaking and writing about it (Generally, very positive) | Yes, but **what is to peer review?** |
| Known or potential rate of error? | **Yes** | **No** |
| Widespread acceptance? | **Working on it**;<br><br>Use of Calculator ↑ | **Yes** |

BPM: A New Approach to CSR

# Cost of Capital, Third Edition

- "Many analysts are able to express qualitative reasons for company-specific risk adjustments <u>but rarely can provide data relating those qualitative factors to actual measurements in expected return</u>." (Emphasis added)

- "In this chapter, <u>we discuss approaches to better quantify the total risk and the related market returns of guideline public companies.  When you use total risk and the related return, you are including company-specific risk</u>." (Emphasis added)

# Cost of Capital, Third Edition (continued)

- *Does such a measure (the BPM) capture the factors that cause company-specific risk?  If you thoroughly analyze the risk factors of guideline public companies, <u>the estimate of company-specific risk premium should reflect the market's pricing of these risks</u>.*  (Emphasis added)

- *<u>This quantitative approach (the BPM) complements a qualitative assessment of the strengths, weaknesses, opportunities, and threats of the subject company</u> compared to its peers by matching the subject company to the guideline public companies with comparable (not identical) strengths, weaknesses, opportunities, and threats relative to their peers.*  (Emphasis added)  P. 236

BPM: A New Approach to CSR

# Issues & Thoughts

- This technique depends upon beta and CAPM (Note: T$\beta$ = $\beta/R$)

    - If T$\beta$ is quite large due to the inability of CAPM to describe a particular company's stock price movements (high volatility), then

    - CSRP will be relatively high

- Does it make sense?

    - There may be very good reasons for the volatility

    - If not – exclude from additional analysis

        Statistical confidence less than 80%

BPM: A New Approach to CSR

# Issues & Thoughts (continued)

- Are some stocks more efficiently priced than others?

    - There might be some unexplained randomness to returns

    - Our calculation of CSRPs assumes either:

        - There is no unexplained randomness to returns

        - Unexplained randomness (to the extent that it exists) is part of CSR

# Issues & Thoughts [continued]

- Appraisers should be aware of how well CAPM and beta describe stock price returns

- Could you use some type of decision rule and compare **historical** risk and cash flow of guidelines with future projections of cash flow of your private company?

# Issues & Thoughts [continued]

- Some appraisers, unfortunately, fall back on "rules of thumb" for privately-held companies
  - They might feel comfortable with a 20% - 25% discount rate, so they may force the CSR to fit their pre-conceived conclusion
  - The **fudge factor**

- While intuition is good, and possibly a sanity check - it is not market-driven
  - This technique is market-driven
  - As appraisers, we believe we observe the market - not set it

# Application Choices

Since valuation is all about the future, we point out a few
   other things:

- It is possible to calculate a forward-looking T$\beta$ (at least for
  some stocks, remember that T$\beta = \sigma_s / \sigma_m$ )

- In our research, we calculated a forward-looking T$\beta$ for
  Procter and Gamble

  - We were curious to see what the market projected for
    PG since we calculated a historical T$\beta$ very close to 1.0
    at 1.02

  - We calculated a forward-looking T$\beta$ equal to 1.42

# Application Choices [continued]

- This is further evidence that the pricing of CSR changes over time

- This forward-looking Tβ approach might be better suited for use with a forward-looking ERP and a forward-looking $\beta = (\beta *.67 + .33)$

- In any event, a forward-looking Tβ would address the potential mismatch in timing where we use the last 5 years or so to calculate β (and Tβ) and only look at the firm's latest Form 10-K to analyze CSR factors

BPM: A New Approach to CSR

# Choices

- Different ERPs

- Confidence/Statistical significance

- Day of the week

- Lookback period

- Market proxy



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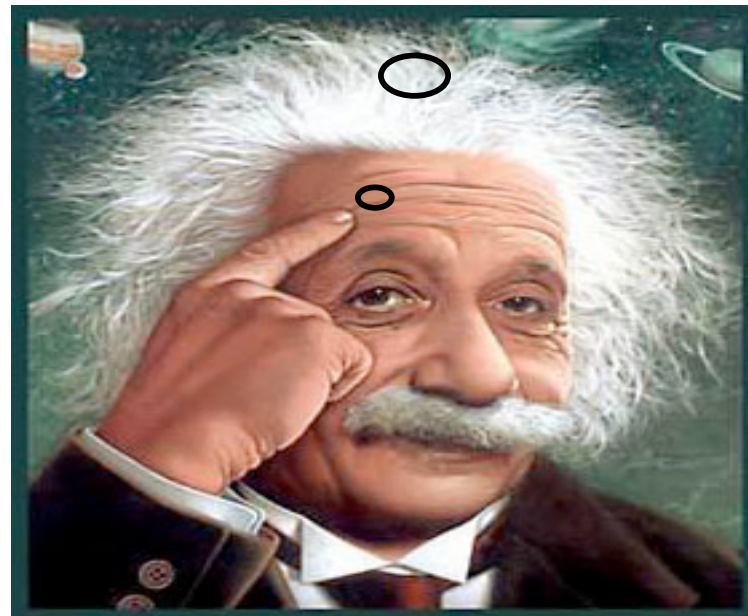
# Equity Risk Premiums

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 7.20% |
| Effective Date: | 7/14/2008 (261 weeks) |

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 5.00% |
| Effective Date: | 7/14/2008 (261 weeks) |

| Ticker | MSFT |
|---|---|
| Company Name | Microsoft Corporation |
| Size Premium | -0.34% |
| Weekly Standard Deviation | 2.91% |
| Levered Beta | 0.87 |
| Correlation Coefficient (R) | 0.53 |
| Total Beta | 1.64 |
| Total Cost of Equity | 16.28% |
| Company Specific Risk Premium | 5.85% |

| Ticker | MSFT |
|---|---|
| Company Name | Microsoft Corporation |
| Size Premium | -0.34% |
| Weekly Standard Deviation | 2.91% |
| Levered Beta | 0.87 |
| Correlation Coefficient (R) | 0.53 |
| Total Beta | 1.64 |
| Total Cost of Equity | 12.68% |
| Company Specific Risk Premium | 4.16% |

BPM: A New Approach to CSR

# Statistical Significance

| Ticker | TCOE | CSRP | Stat. Significance | Trading |
|--------|------|------|--------------------|---------|
| | | | | |
| AIQ | 31.53% | 18.87% | 99.00% | |
| | | | | |
| RDNT | 51.36% | 38.13% | 50.00% | |
| | | | | |
| MRDG.PK | 43.04% | 29.82% | 50.00% | Thinly |
| | | | | |
| SCKO.OB | 35.96% | 23.28% | 50.00% | Thinly |

BPM: A New Approach to CSR

# Day of the Week

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 6.30% |
| Effective Date: | 7/14/2008 (261 weeks) |

| Ticker | HD |
|---|---|
| Company Name | Home Depot, Inc. |
| Size Premium | -0.34% |
| Weekly Standard Deviation | 3.36% |
| Levered Beta | 1.26 |
| Correlation Coefficient (R) | 0.66 |
| Total Beta | 1.89 |
| **Total Cost of Equity** | **16.42%** |
| **Company Specific Risk Premium** | **4.35%** |

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 6.30% |
| Effective Date: | 7/11/2008 (261 weeks) |

| Ticker | HD |
|---|---|
| Company Name | Home Depot, Inc. |
| Size Premium | -0.34% |
| Weekly Standard Deviation | 3.43% |
| Levered Beta | 1.25 |
| Correlation Coefficient (R) | 0.63 |
| Total Beta | 2.00 |
| **Total Cost of Equity** | **17.09%** |
| **Company Specific Risk Premium** | **5.06%** |

**Remember—it's not just 1 trading day—it's 1 trading day over five years…**

BPM: A New Approach to CSR

# The Importance of the Look back period

**Things Change Over Time. . .**

# Things Change Over Time…

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 6.30% |
| Effective Date: | 7/14/2008 (261 weeks) |

| Ticker | ETFC |
|---|---|
| Company Name | E*TRADE Financial Corporation |
| Size Premium | 2.20% |
| Weekly Standard Deviation | 8.03% |
| Levered Beta | 2.63 |
| Correlation Coefficient (R) | 0.58 |
| Total Beta | 4.52 |
| **Total Cost of Equity** | **32.98%** |
| **Company Specific Risk Premium** | **9.72%** |

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 6.30% |
| Effective Date: | 7/14/2008 (105 weeks) |

| Ticker | ETFC |
|---|---|
| Company Name | E*TRADE Financial Corporation |
| Size Premium | 2.20% |
| Weekly Standard Deviation | 11.12% |
| Levered Beta | 2.89 |
| Correlation Coefficient (R) | 0.56 |
| Total Beta | 5.12 |
| **Total Cost of Equity** | **36.77%** |
| **Company Specific Risk Premium** | **11.86%** |

BPM: A New Approach to CSR

# E-Trade (ETFC)



**E-Trade (ETFC)**

Stock price

Company-Specific Risk

7.61%

4.58%

# Countrywide Financial (CFC)



**Country Wide Financial:
Sub-Prime Debacle**

Risk-free rate = 5%, ERP= 6%, S&P 500, 5-year-look back as of 12/19

BPM: A New Approach to CSR
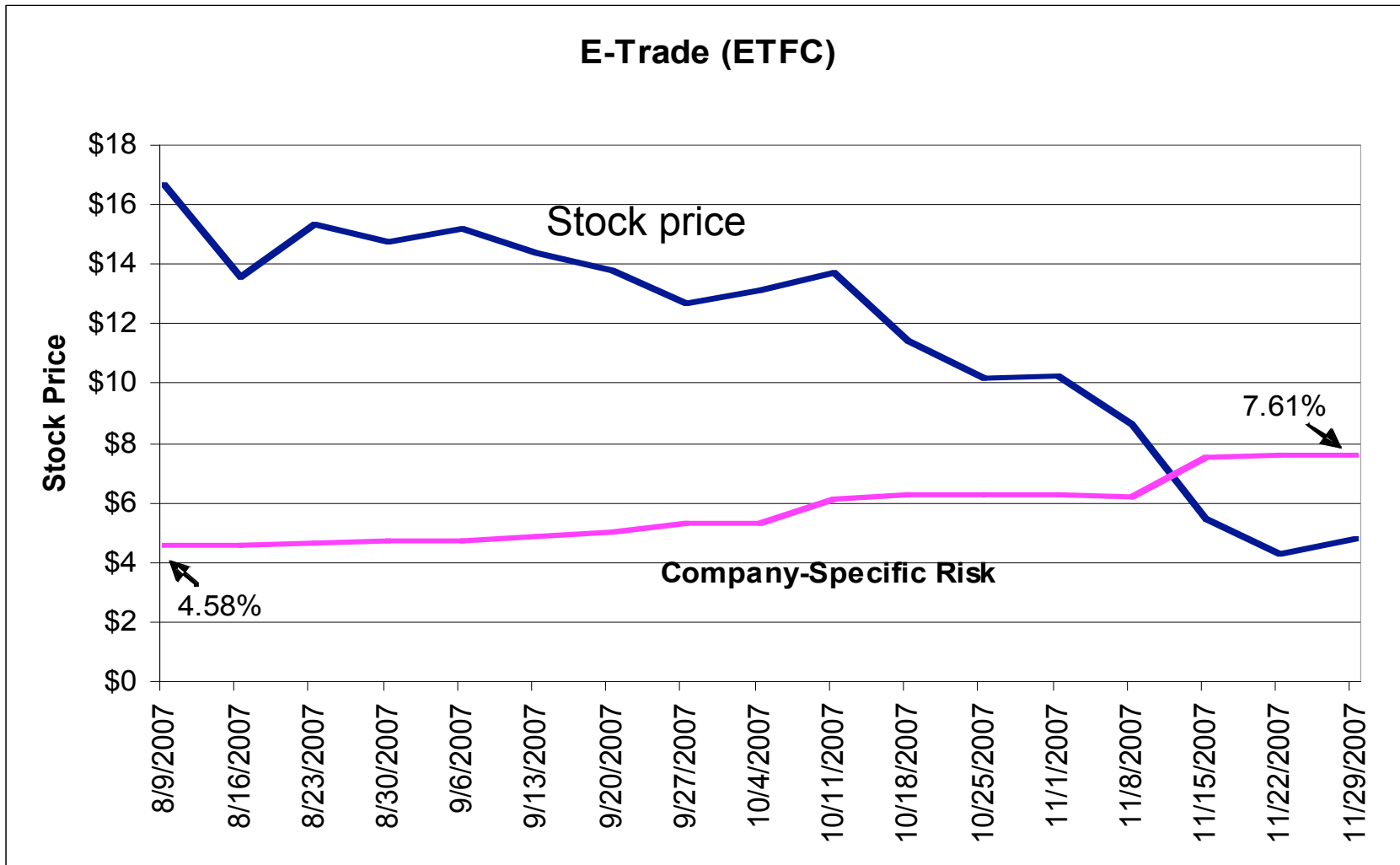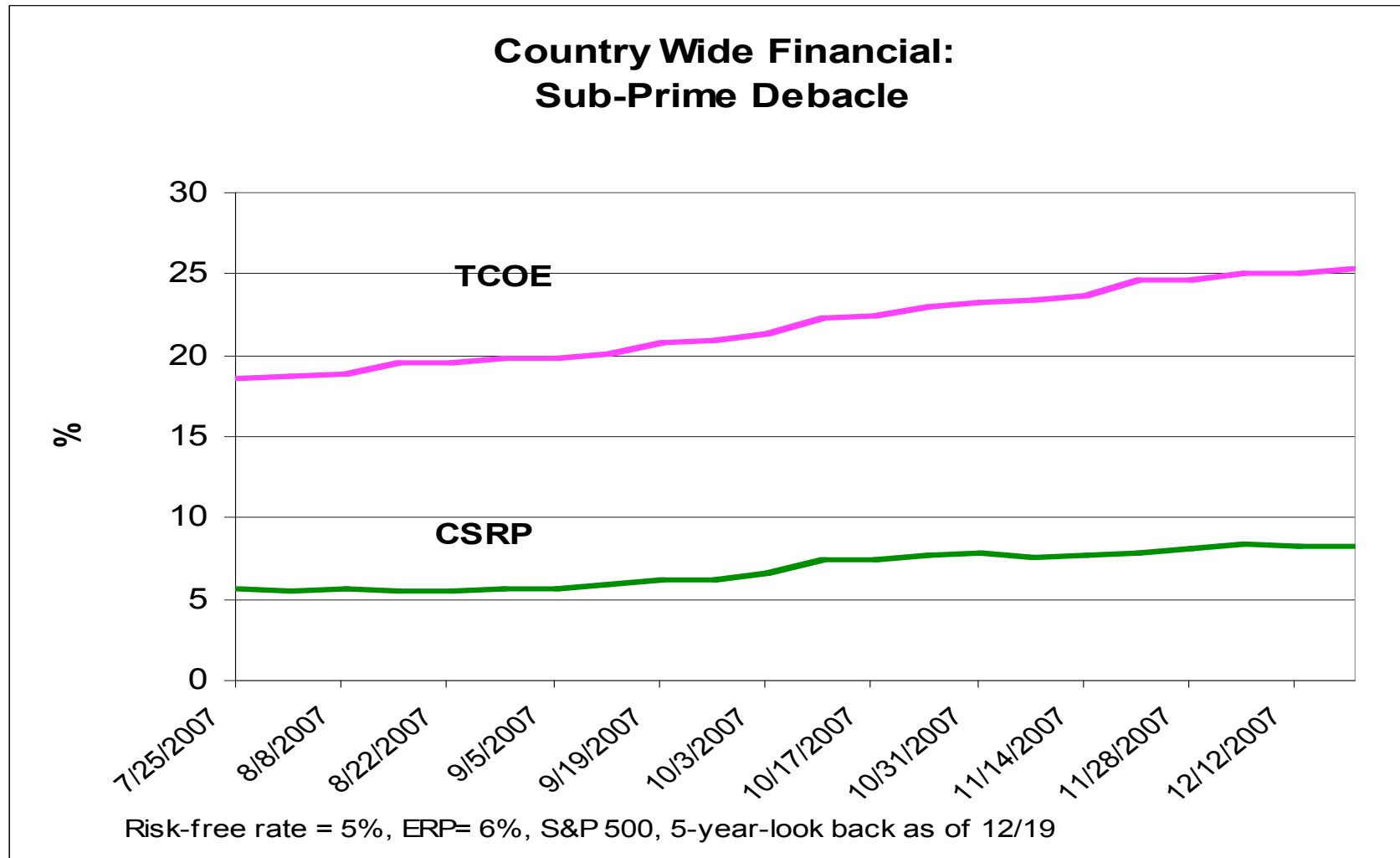
# Market Proxy

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 6.30% |
| Effective Date: | 7/11/2008 (261 weeks) |

| Ticker | AAPL |
|---|---|
| Company Name | Apple Inc. |
| Size Premium | -0.34% |
| Weekly Standard Deviation | 5.46% |
| Levered Beta | 1.41 |
| Correlation Coefficient (R) | 0.44 |
| Total Beta | 3.18 |
| **Total Cost of Equity** | 24.53% |
| **Company Specific Risk Premium** | **11.50%** |

**Using the S&P 500**

| Risk Free Rate: | 4.50% |
|---|---|
| Equity Risk Premium: | 6.30% |
| Effective Date: | 7/11/2008 (261 weeks) |

| Ticker | AAPL |
|---|---|
| Company Name | Apple Inc. |
| Size Premium | -0.34% |
| Weekly Standard Deviation | 5.46% |
| Levered Beta | 1.19 |
| Correlation Coefficient (R) | 0.49 |
| Total Beta | 2.42 |
| **Total Cost of Equity** | 19.75% |
| **Company Specific Risk Premium** | **8.11%** |

**Using the NASDAQ Composite**

BPM: A New Approach to CSR

## Total Cost of Equity and Public Company Specific Risk Calculator™

Calculate total cost of equity and public company-specific risk as benchmarks for private company valuations

**BPM**
Butler Pinkerton Model™

Below are the results of your calculation. You may print a copy for your records, click "download" to save a Microsoft Excel-compatible version, or click "email" to send yourself an electronic copy of the calculation in both HTML and Microsoft Excel-compatible formats.

◀ back | new calculation | ⊠ download | ☑ email

| | |
|---|---|
| Risk Free Rate: | 5.00% |
| Equity Risk Premium: | 6.00% |
| Effective Date: | 3/18/2008 (261 weeks) |

| Ticker | HB | GE | BUD |
|---|---|---|---|
| Company Name | Hillenbrand Industries Inc. | General Electric Company | Anheuser-Busch Companies, Inc. |
| Size Premium | 1.27% | -0.36% | -0.36% |
| Weekly Standard Deviation | 2.92% | 2.30% | 1.84% |
| Levered Beta | 0.68 | 0.88 | 0.42 |
| Correlation Coefficient (R) | 0.38 | 0.62 | 0.37 |
| Total Beta | 1.80 | 1.42 | 1.13 |
| **Total Cost of Equity** | **15.80%** | **13.51%** | **11.79%** |
| **Company Specific Risk Premium** | **5.45%** | **3.58%** | **4.64%** |

Additional Regression Statistics:

| | | | |
|---|---|---|---|
| Constant | -0.001 | 0.000 | -0.001 |
| Coefficient of Determination (R²) | 0.14 | 0.39 | 0.14 |
| T-Stat | 6.55 | 12.75 | 6.38 |
| Level of Statistical Significance | 99.0% | 99.0% | 99.0% |
| Degrees of Freedom | 258 | 258 | 258 |

| **Summary Statistics for Sample** | **Beta** | **Total Beta** | **Total Cost of Equity** | **CSRP** |
|---|---|---|---|---|
| Count | 3 | 3 | 3 | 3 |
| Minimum | 0.42 | 1.13 | 11.79% | 3.58% |
| 25th Percentile | 0.55 | 1.27 | 12.65% | 4.11% |
| Median | 0.68 | 1.42 | 13.51% | 4.64% |
| Mean | 0.66 | 1.45 | 13.70% | 4.56% |
| 75th Percentile | 0.78 | 1.61 | 14.65% | 5.05% |
| Maximum | 0.88 | 1.80 | 15.80% | 5.45% |
| Standard Deviation | 0.23 | 0.34 | 2.01% | 0.94% |
| Mean plus 2 Standard Deviations | 1.12 | 2.12 | 17.72% | 6.43% |

**Marilyn Ferguson:**

It's not so much that we're afraid of change or so in love with the old ways, but it's that place in between that we fear . . . .

BPM: A New Approach to CSR

# Practical Exercise

- Subject company:  Beeswax, Inc. (BW)

- Guideline companies:
  - CCA Industries (CAW)
  - Scott's Liquid Gold (SLGD)
  - The Stephan Company (TSC)
  - United Guardian (UG)

# Guidelines

| | | | | |
|---|---|---|---|---|
| Risk-free rate | 4.50% | | | |
| Equity Risk Premium | 5.00% | | | |
| Effective Date | 1/15/2007 | | | |
| | | | | |
| Ticker | CAW | SLGD | TSC | UG |
| Company name | CCA Ind. | Scotts Liquid Gold | Stephan Co. | United-Guardian |
| | | | | |
| Size Pemium | 5.80% | 5.80% | 5.80% | 5.80% |
| Levered Beta | 0.38 | 0.33 | -0.03 | 0.37 |
| R | 0.13 | 0.09 | 0.01 | 0.17 |
| R-square | 0.02 | 0.01 | 0.00 | 0.03 |
| T-stat | 2.03 | 1.49 | 0.22 | 2.75 |
| Statistical Significance | 95.0% | 86.0% | 17.0% | 99.0% |
| Total Beta | 3.07 | 3.54 | 2.17 | 2.18 |
| TCOE | 19.85% | 22.20% | 15.30% | 15.41% |
| CSRP | 7.63% | 10.27% | 5.18% | 3.27% |

BPM: A New Approach to CSR

# Beeswax' CSRP = ?

- Review excerpts from 2006 Forms 10-K and information on Beeswax.

- Review excerpts from Yahoo!Finance.com

- Group discussion

# The "Takeaways"

- All companies have company-specific risk (CSR).
  - Do not start your build-up of CSR at 0%.
  - Never go negative. 0% is an artificially low starting point.

- **Total beta trumps all other betas –** Little, if any, need to "correct" total beta or beta
  - Captures 100% of disclosed risks
  - Relatively stable
  - Same reference point we use to value private companies
  - Empirical benchmarks for TCOE!

- **Empirical evidence/support:**

   **- TCOE = Risk-free rate + Total Beta*ERP**

   **- CSRP = (Total Beta – Beta)*ERP – SP.**

- **New Approach:** Combination BPM and Factor Models empowers the appraiser!

# Additional Questions?