Valuation of Privately Held Technology Businesses

CERES Technology Advisors, Inc.

Valuation of Technology Businesses

Introduction to Business Valuation

- Theory and Purpose
- Data Gathering
- Analysis – Economic, Industry, Company

Market Approach

- Guideline Public Company Method
- Guideline Merger & Acquisition Method

Income Approach

- Theory
- Forecasting
- Discount Rates
- Private Cost of Capital
- International Cost of Capital

Reaching a Conclusion of Value

- Reconciling Approaches
- Levels of Value
- Discounts and Premiums

INTRODUCTION TO BUSINESS VALUATION

THEORY AND PURPOSE

DATA GATHERING

ANALYSIS – ECONOMIC, INDUSTRY, COMPANY

Business Valuation

What is my business or product line worth to a strategic buyer? … to a financial buyer?

How much equity would my company give-up to obtain growth financing?

What is the value of my intellectual property to a strategic development partner?

How do I persuade my potential buyer, investor or partner of that value?

Audience & Purpose

Forecasts & Financials

Approach & Analysis

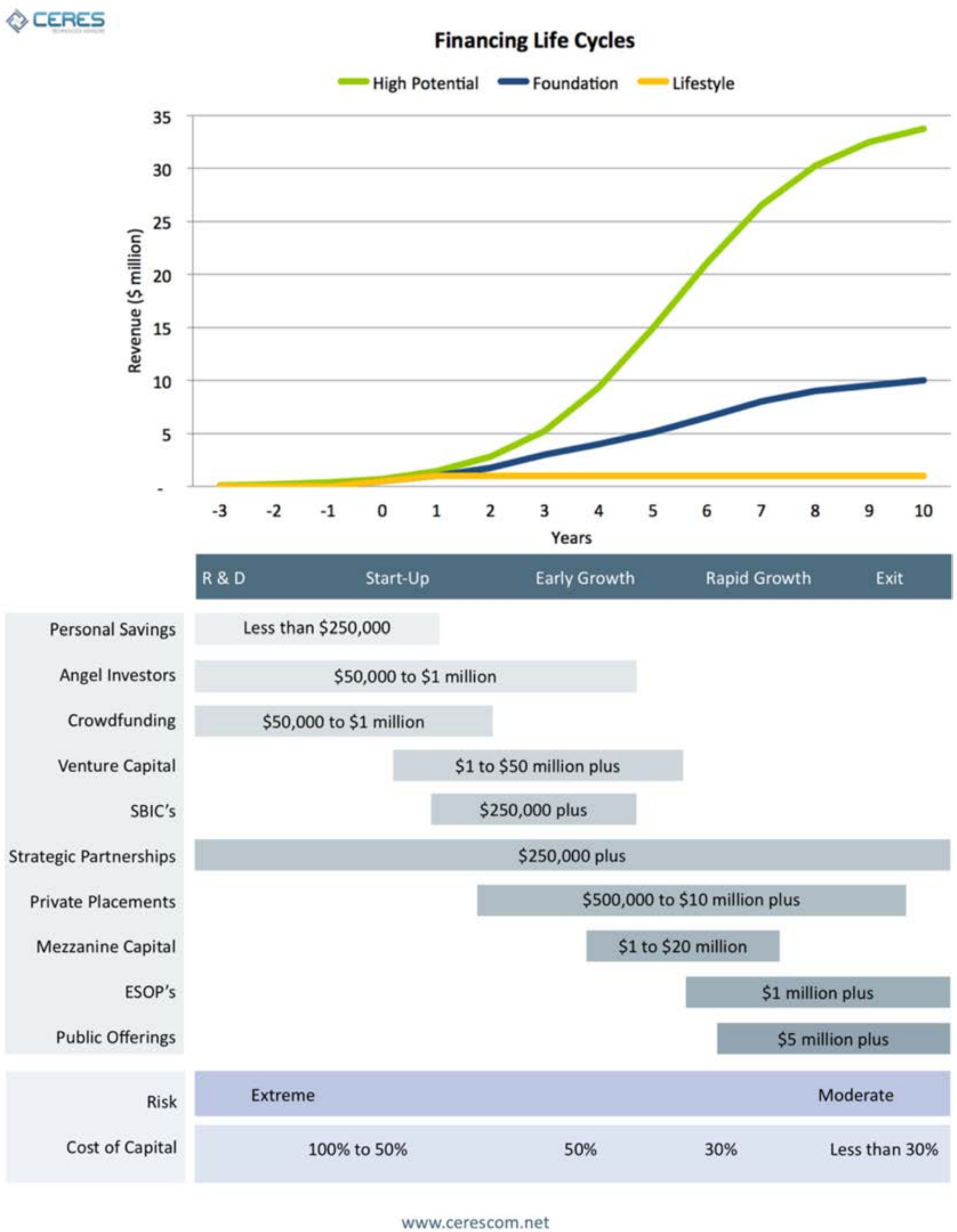
Valuation of Private Tech Businesses

TECHNOLOGY BUSINESS

- High market uncertainty
- High technological uncertainty
- Products typically exhibit network externalities
- Products typically are not used alone, but in larger systems
- Complex business ecosystem with lots of coopetition
- One technology & many, many business opportunities and product possibilities

PRIVATELY HELD BUSINESS

- Smaller in size
- Less management depth & succession planning
- Less product line diversification
- Less competitive market position & market share
- More supplier or customer dependence
- Lack of access to public markets
- Managed to minimize taxes & not maximize income
- Typically organic growth
- Longer term outlook
- Lack of patents or brand name relevance



FINANCING LIFE CYCLES

Sources of capital have different preferences & practices

How much money they will provide

When in a company's life cycle they will invest

Cost of capital or expected rate of return

Available sources of capital change dramatically for companies with different rates of growth & upside potential

Strategic partnerships can be low to no cost of capital

"Early access" agreements

- Capital
- Technical
- Product marketing
- Market access

Monetizing non-core IP

- Royalty
- Market access
- Focus on core products

Valuation of Private Technology Businesses Approaches

Most Commonly Used – Not Sound Approaches

Valuing business by simply applying a guideline public company's multiples of revenue or EBITDA

Valuing business by simply applying a guideline M&A transaction multiple

Valuing a business by discounting cash flows with a Weighted Average Cost of Capital (WACC) equivalent to that of a public company

Valuation – Market Approach

Market Multiple Adjustments

HYPOTHETICAL CONVERSATION

"my company makes fiber lasers, so I expect to receive 4.5x Revenue when I sell my company, because IPG Photonics, the market leading fiber laser company, is trading at 4.5x Revenue"

....

"regardless that I have $10million in sales, <$500K EBITDA, and 3 years of inventory on my balance sheet because I batch buy optics, machined parts, diodes in large quantities to keep my gross profit margins profitable ....and I really don't see myself ever working for a large corporation after I sell the business."

"$45million may be the right number, but it has little to nothing to do with what IPG Photonics or any publicly traded comparable company is trading at today"

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Valuation – Market Approach
Market Multiple Adjustments

Revenue multiple is only relevant when there is high correlation with EBITDA and EBIT

Discount for Size

- Smaller size is associated with
  - Limited marketing resources
  - Reduced access to capital
  - Lack of geographical or global diversification
  - Lack of product and service offering diversification
  - Lack of management depth and breadth
- Public Risk Premium data is used to calculate a factor representing relative difference in size between the guideline company and subject company
- Guideline public companies should not be more than order of magnitude larger or smaller

Market approach is rarely relevant when subject company is forecast to grow at a higher or lower rate that the public market comps

Valuation – Market Approach
Market Multiple Adjustments

Key Person Discount

- Future financial performance is highly dependent on one person or too few people
  - % difference in present value of forecasted cash flows with and without key person(s)
  - Published studies, i.e., Bolton/Wang Study
    - With <six persons on management team, average decrease in stock value for public firms is 9.43% when key person left
    - With <$280 million capitalization, the decrease in stock value for public firms is 8.65%
    - The smaller the firm, the greater the impact

Lack of Marketability

- Inability of owner of a non-controlling equity interest to convert investment into cash quickly and at reasonably predictable cost
  - Published studies, i.e., Houlihan Valuation Pre-IPO Study

	Annual Revenue ($mil)	Median Discounts
1st Quartile	49 to 527	16%
2nd Quartile	16 to 48	17%
3rd Quartile	4 to 15	24%
4th Quartile	0 to 3	42%

Qualitative Factors

- Product line, market and geographical diversification
- Diversity on the management team and Board of Directors

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Valuation - Income Approach
Private Cost of Capital

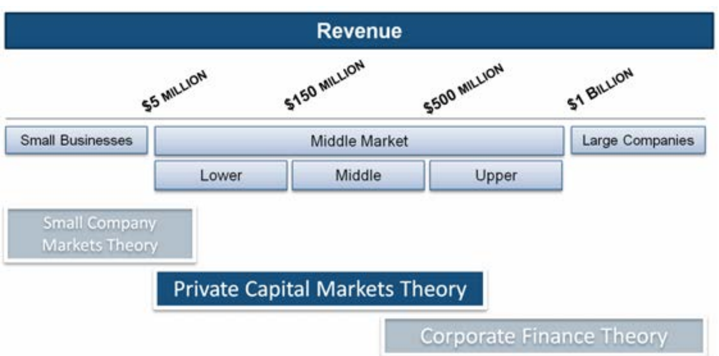
PRIVATE COST OF CAPITAL

Applied to private companies

New model introduced by Rob Slee and John Paglia, "Private Cost of Capital Model." The Value Examiner. March / April 2010

Based on the expected rate of return that private capital markets require in order to attract funds to a particular investment

Addresses fundamental issue that public and private capital markets are not substitutes



BUILD-UP METHOD & CAPITAL ASSET PRICING MODEL

Applied to public and private companies

The accepted and compliant methods to value both public and private businesses

Based on expected rate of return of public markets

Assumes that public and private markets are substitutes

Corporate Finance Theory grounded in assumptions around single efficient public market ignores fundamental differences with private companies

- No access to public markets and never plan to IPO
- Business is managed to minimize taxes and not maximize profits
- Business is not necessarily C-Corporation
- Owners have unlimited liability
- Owners are undiversified with typically one primary asset
- Owners re actively manage business

Valuation - Income Approach
Private Cost of Capital

Pepperdine PCOC Survey

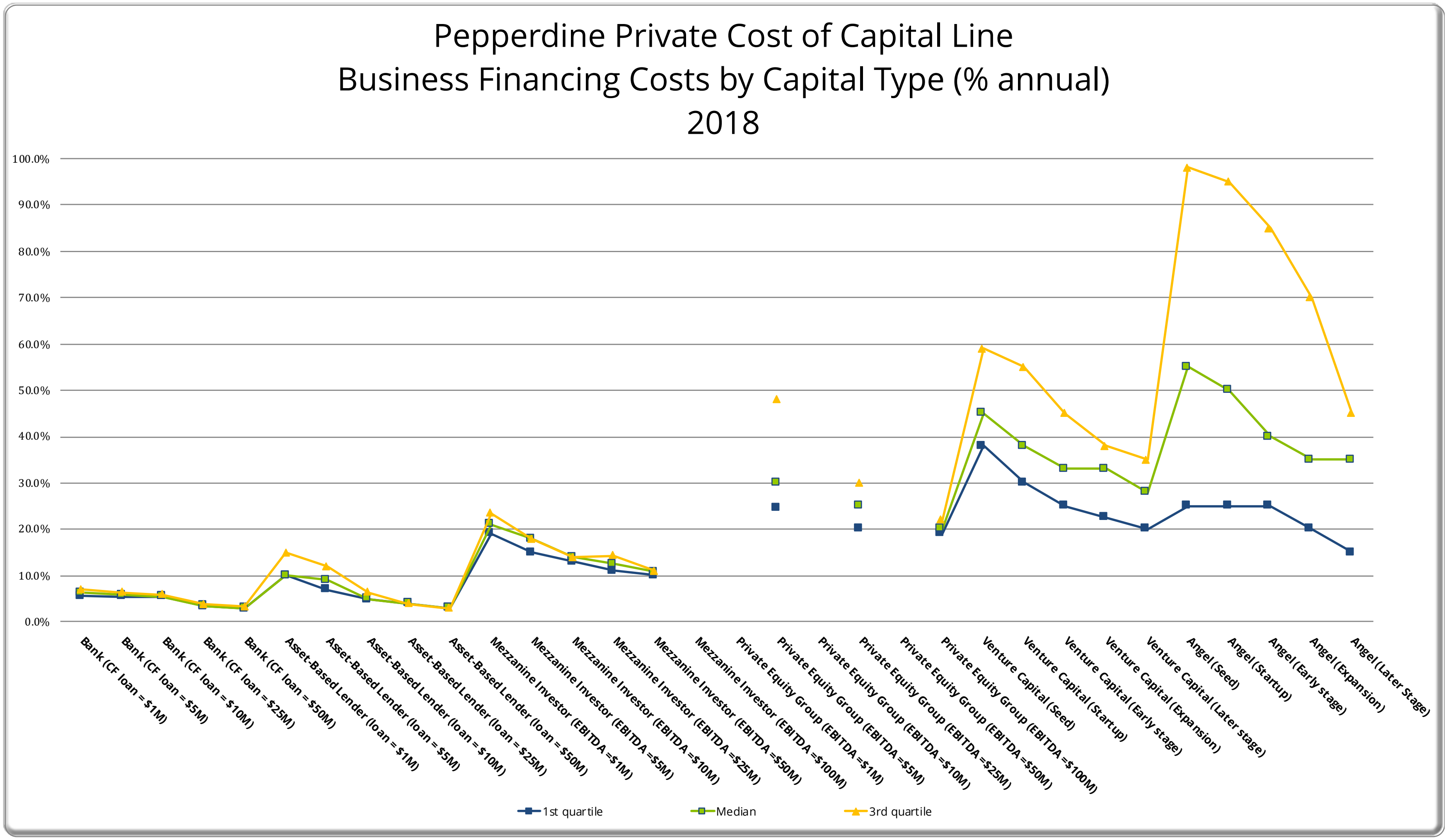
Web based survey of tens of thousands of capital providers
- Banks
- Asset based lenders
- Mezzanine investors
- Private equity groups
- Venture capitalists
- Factoring companies
- Business owners
- Investment banks
- Business valuation professionals

Investigates for each private capital market segment, the important benchmarks that must be met in order to qualify for capital
- Amount of capital typically accessible
- Required returns for extending capital in the current economic environment
- Outlooks on demand for various capital types
- Interest rates
- Economy in general

Private Equity, for example
- 327 firms responded
- Median PE realized return last 12 months, 25%
- Median expected return next 12 months, 27%
- 68% control transactions
- 70% say demand for business investment is up from six months ago, as are investment standards, appetite for risk, and quality of companies seeking investment
- 33% report making zero investments in last 6 months
- Report following deal multiples of EBITDA in manufacturing industries

Manufacturing Companies	$1M EBITDA	$5M EBITDA	$10M EBITDA	$25M EBITDA
1st quartile	4.0	4.7	4.3	5.0
Median	4.0	5.0	5.0	6.0
3rd quartile	4.8	5.0	5.0	6.0

Valuation - Income Approach
Private Cost of Capital



Valuation - Income Approach

Private Cost of Capital

First, determine the appropriate CAP by reviewing credit boxes described in most current Pepperdine survey

Next, select appropriate median CAP from survey results

Then, adjust survey CAP by $SCAP_i$ to reflect company specific risk based on comparison between subject company and survey

Use upper and lower quartile returns as a guide to this adjustment

Determine market value of each CAP

Derive percentage of capital structure for each CAP

Finally, add individual percentages to derive PCOC

$$PCOC = \sum_{i=1}^{N} \left[(CAP_i + SCAP_i) * \frac{MV_i}{\sum_{j=1}^{N} MV_j} \right]$$

Where N = number of sources of capital
MV_i = market value outstanding securities i
CAP_i = median expected return for capital type i
$SCAP_i$ = specific CAP_i risk adjustment for capital type i

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Valuation of Technology Businesses

Course Focus

Purpose

- Sell
- Buy
- Finance
- Exit Strategy
- License

Standards of Value

- Fair market value
- Investment value

Premise of Value

- As going concern

Approaches

- Income
- Market

Technology Businesses

Privately Held Businesses

Business Valuation - Purpose

Buying, selling, or merging all or partial business interest

Financing

- Management and leveraged buyouts
- Recapitalizations
- Venture or private capital financing
- Project financing

Tax related

- Estate, gift and inheritance taxes
- S-Corporation elections
- Charitable contributions
- Ad valorem taxes

Transfer pricing

Change of ownership

- Financial reporting
- Purchase price allocation
- Impairment of goodwill testing

Fairness opinions

Employee Stock Option Plans (ESOPS)

Dissenting stockholder/shareholder oppression actions

Corporation or partnership dissolutions and divorces

Damages cases

- Antitrust
- Breach of contract
- Condemnation
- Insurance casualty claims from business interruption or termination
- Lost profits
- Lost business opportunity
- Commercial reasonableness
- Intellectual property infringement

Professional Appraisers

Professional Appraisers

- American Society of Appraisers
- Institute of Business Appraisers
- American Institute of Certified Public Accountants
- CFA Institute

Other professionals with inputs

- Accountants
- Lawyers – corporate, tax, IP

USPAP

- The Uniform Standards of Professional Appraisal Practice
- Obligates appraiser to exhibit competency – familiar with specific type of business, the markets it which it sells, and analytical methods to value

Approaches to Value

Market Approach

Value based on premise that a prudent buyer will pay no more for a property than it would cost to acquire a substitute property with the same utility

Recent valuations of similar properties adjusted for dissimilarities

Income Approach

Value based on present value of expected future returns, discounted or capitalized at a rate that represents the risk

Σ (Net Cash Flow$_t$ / (1 + Discount Rate)^t)

Asset Approach

Sum of all assets and liabilities adjusted to fair market value

	Market	Income
Forecasts	Difficult to find similar companies Secondary data sources for private company transactions can be inaccurate	Estimating discount rates is complex Projecting cash flows is difficult
Analytics	Direct method	"Pure" value theory
Audience	Most easily communicated to broad audiences	Perceived as subjective

Standards of Value

Fair Market Value

Amount property would change hands between willing buyer and seller when neither is under compulsion and both have reasonable knowledge of relevant facts

Investment Value

Specific value to particular class of investors – likely with operating and market synergies

Fair Value

Legal definition varies from jurisdiction to jurisdiction

Financial reporting definition, FASB ASC 820

Intrinsic Value

Value that will become Fair Market Value when other investors reach same conclusion

Hold, Buy, Sell

Purpose	Typical Applicable Standard
Purchase or sale by financial buyer	Fair Market
Purchase or sale by strategic buyer	Investment
Financial accounting (FASB)	Fair
Employee Stock Option Plans	Fair Market
Shareholder Dissent and Oppression	Fair

Premise of Value

Going Concern Value Premise

Foregoing definitions assumption

Liquidation Value Premise

Business is better off dead than live

- Orderly
- Forced

Value in Exchange

Foregoing definitions assumption

Presupposes property will change ownership

Reference market and economic conditions

Value in Use

Does not presuppose property will change ownership

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Variables Affecting Value

Enterprise Future Financial Performance

Macroeconomics
- Business cycle
- International economic factors
- Government policies
- Long-term trends
- ….

Capital Market Factors
- Inflation
- Cost of debt & equity
- Investment risk
- Long-term trends
- ….

Industry
- Market structure
- Competition
- Capital intensiveness
- Long-term trends
- ….

Legal & Tax
- Corporate governance
- IP, Litigation
- Gov't regulation & taxes
- Long term trends
- ….

Business Operations
- Sales & marketing process
- Production operations
- Human resource management
- Long term trends
- ….

Accounting & Finance
- Interpretation of statements
- Financial condition
- Financial outlook
- Long term trends
- ….

Variables Affecting Value
Photonics & Markets Served

	Photonics	Markets Served
Market Dynamics		
Business Model	Cost plus, hardware-centric	Consumables, subscriptions, services, content
Competition	Fierce, fragmented	Concentrated
Barrier to Entry	Lower	Higher
Ecosystem	Few complementors with whom to align	Wide breadth of complementors up & down the value chain
Power	OEM customers and suppliers	More balanced
Financial Implications		
Capital	Intensive	Less intensive
Working Capital	High inventory, A/P higher than A/R turnover	Less inventory, more 0 days A/R
Profitability	Lower	Higher
Intellectual Property	Low % of total assets	High % of total assets
Valuation	Lower	Higher

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Data Gathering
What is Being Valued?

Purpose

Type of Business

- Corporation
- LLC
- Partnership

Business Interest

- Common or Preferred Stock
- Assets
- Invested Capital
- Specific Intangible Assets
- Options or Warrants

Level of Ownership

- Controlling
- Minority

Effective Date

Scope

- Appraisal
- Limited Appraisal
- Calculation

Assets	Liabilities
Current Assets Cash Accounts Receivable Inventory Other Assets	Current Liabilities Accounts Payable Income Taxes Payable Other Current Liabilities
	Interest Bearing Debt - Short Term
Fixed Assets Equipment Buildings Land	Non-current Liabilities Interest Bearing Debt - Long Term
Other Assets Investments Life Insurance	Stockholder's Equity Preferred Stock Common Stock
Intangible Assets Identifiable Non-identifiable	

Invested Capital

Data Gathering

Document & Information Checklist for Business Valuation

Financial Statements

- Balance sheets, income statements, statements of cash flows, statements of stockholders' equity for the last five fiscal years
- Income tax returns for the same years
- Latest interim statements and interim statements for comparable periods of previous year

Other Financial Information

- Summary property, plant, and equipment list; depreciation schedule; capital budget
- Aged accounts receivable summary
- Aged accounts payable summary
- Inventory summary and necessary information on inventory accounting policies
- Lists of marketable securities and prepaid expenses
- Summary of leases for equipment and facilities
- Other existing contracts (employment agreements, covenants not to compete, supplier agreements, customer agreements, royalty agreements, equipment lease or rental contracts, loan agreements, labor contracts, employee benefit plans, etc.)
- Capitalization table - list of stockholders with number of shares owned by each
- Schedule of insurance in force (key person life, property and casualty, liability)
- Budgets or projections for a minimum of five years; business plan
- List of subsidiaries and/or financial interests in other companies
- Key personnel compensation schedule including benefits and personal expenses
- Details of any transactions with related parties

Data Gathering
Subject Company Data and Sources

Company Documents

- Articles of incorporation, bylaws, and any amendments to either
- Any existing buy-sell agreements, options to purchase stock, or rights of first refusal
- Franchise or operating agreement

Other Company Information

- Brief history including how long in business and details of any changes in ownership and/or any bona fide offers recently received
- Brief description of the business, including position relative to competition and any distinctive characteristics that make the business unique
- Web site and marketing literature (catalogs, brochures, ads, etc.)
- List of locations where company operates; size and recent appraisals
- List of competitors including relative size and market position with respect to critical success factors
- Organization chart
- Resumes of key personnel with age, position, compensation, length of service, education and prior experience
- Personnel census: number of employees by functional group (production, sales, marketing, customer service, engineering/R&D, applications engineering, human resources, accounting, etc.)
- Trade associations to which the company belongs or would be eligible
- Relevant trade, analyst, or government publications including market forecasts
- Existing indicators of asset values, including latest property tax assessments, and asset appraisals
- List of customer relationships, supplier relationships, and contracts
- List of patents, copyrights, trademarks, and other intangible assets
- Contingent or off-balance sheet liabilities (pending lawsuits, compliance agreements, warranty or other product liabilities, estimate of medical or pension benefits for retired employees, etc.)
- Filings or correspondence with regulatory agencies
- Information regarding prior transactions in the stock or related party transactions

Data Gathering

Economic Data and Sources

Known or knowable as of valuation date

National economy

- US Bureau of Census and Dept. of Commerce
- *Business Week's* "Economic Trends" and "Business Outlook"
- *Wall Street Journal's* "Tracking the Economy Statistics"
- *Federal Reserve Bulletin*
- *Survey of Current Business, and Economic Report of the President*

Regional economy

- Federal Reserve's bi-annual Beige Book report
- Bureau of Labor Statistics

International markets

Data Gathering

Industry Data

Known or knowable as of valuation date

Trends in growth, structure, technology, regulation

Industry financial performance

Competition

Public companies

Data Gathering
Industry Data Sources

Known or knowable as of valuation date

General business publications

- Standard & Poor's *Value Line Investment Survey, Industry Reports,* and *Industry Surveys*
- US Dept. of Commerce tracks industry statistics
- *Business Week* and *Forbes* – January issues
- *Guide to Business Periodicals*

Industry Financial Ratios

- Risk Management Association
- Integra
- BizMiner

Trade Associations

- SPIE
- OSA
- IEEE

Trade Magazines

- Laser Focus World
- Photonics Spectra
- BioPhotonics
- Industrial Laser Solutions
- BioOptics
- LEDs Magazine

Third Part Analysts

- Strategies Unlimited
- First Research
- Industry Research
- Valuation Resources

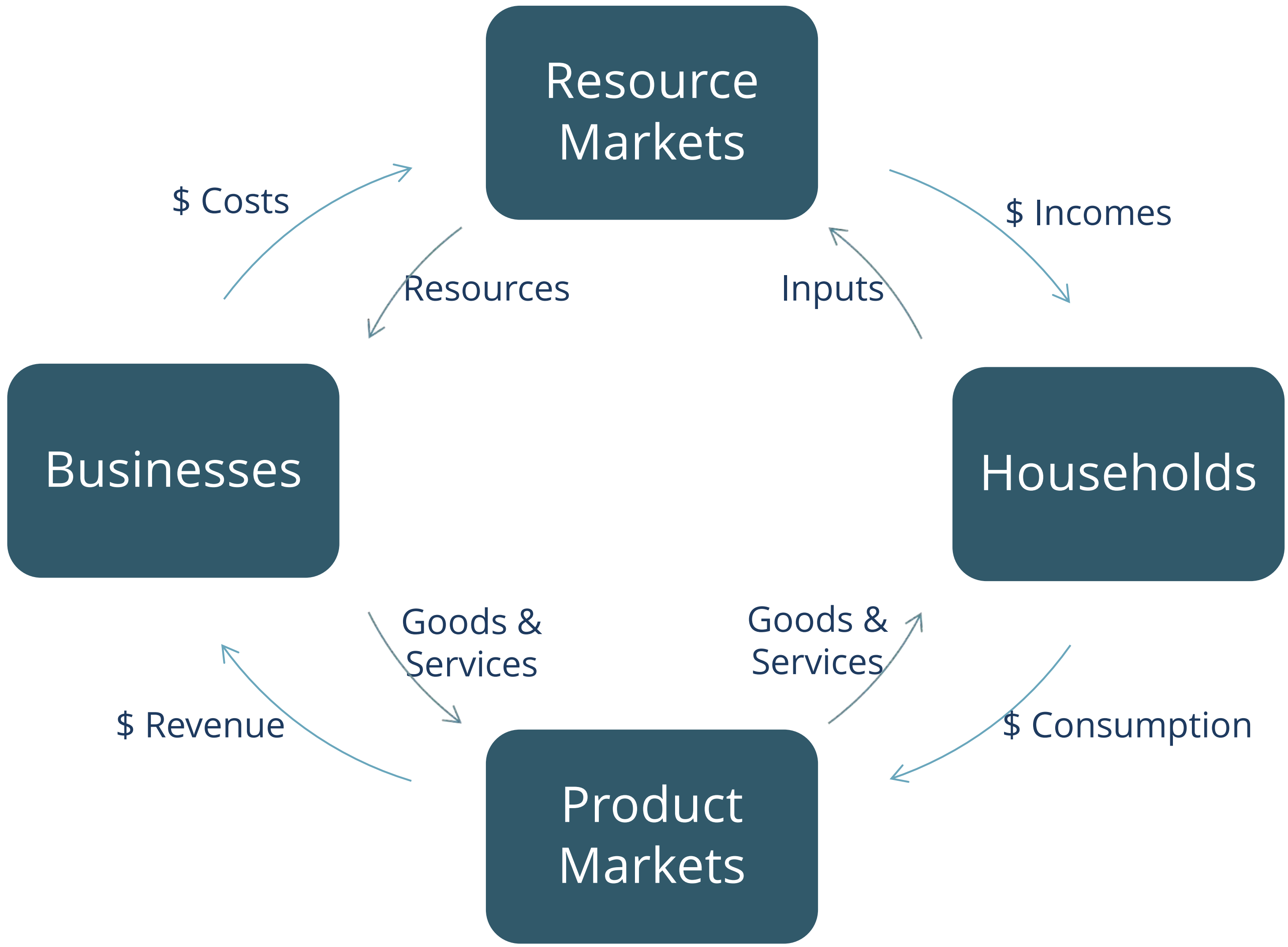
SEC Form 10-K's for publicly traded companies

Brokerage reports

- Investext

Analysis

Economic & Political



Industry Analysis
Porter's Five Forces

Industry Analysis

Porter's Five Forces and Generic Strategies

	Cost Leadership	Differentiation	Focus
Entry Barriers	Ability to cut price in retaliation deters potential entrants	Customer loyalty can discourage potential entrants	Focusing develops core competencies than can act as an entry barrier
Buyer Power	Ability to offer lower price to powerful buyers	Large buyers have less power to negotiate because of few close alternatives	Large buyers have less power to negotiate because of few alternatives
Supplier Power	Better insulated from powerful suppliers	Better able to pass on supplier price increase to customers	Suppliers have power because of low volume, but a differentiation-focused firm is better able to pass on supplier price increases
Threat of Substitut es	Can use low price to defend against substitutes	Customers become attached to differentiating attributes, reducing threats of substitutes	Specialized products and core competency protect against substitutes
Rivalry	Better able to compete on price	Brand loyalty to keep customers from rivals	Rivals cannot meet differentiation-focused customer needs

Company Analysis
SWOT Analysis

Assess qualitative factors of business with SWOT Analysis

Strengths (internal)	Weaknesses (internal)
What do you do better than your competitors? What intellectual property do you own and exercise?	What do the competitors do better than you? What do you need to do to compete more effectively?
Opportunities (external)	**Threats (external)**
What changes are occurring in the industry or customer demands that you can take advantage of? What weaknesses of your competitors can you take advantage of?	What changes are occurring in the industry or in consumer demand that your competitors can take advantage of? What are your competitors doing to attract your customers?

Financial Analysis

Financial Statement Adjustments

Normalization adjustments depend on valuation approach and whether a controlling or minority interest is being valued

- GAAP
  - Last In First Out (LIFO) vs. First In First Our Inventory (FIFO)
- Non-operating or Excess Items
  - Adjust out assets and/or liabilities that are not necessary to operate the business
  - Most applicable to control value
- Non-recurring Items
  - Adjust out items that are not expected to re-occur normal circumstances
- Discretionary Items
  - Most applicable to control value

Financial Analysis

Liquidity Ratios

MEASURE ABILITY OF COMPANY TO MEET ITS SHORT-TERM FINANCIAL OBLIGATIONS

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio} = \frac{\text{Cash + Cash Equivalents + Trade Receivables (net)}}{\text{Current Liabilities}}$$

$$\text{Working Capital Turnover} = \frac{\text{Sales}}{\text{Working Capital}}$$

Financial Analysis

Turnover Ratios

MEASURE HOW EFFECTIVELY COMPANY EMPLOYS ITS ASSETS

$$\text{Inventory Turnover} = \frac{\text{Sales}}{\text{Inventory}}$$

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales}}{\text{Accounts Receivable}}$$

$$\text{Average Collection Period} = \frac{\text{Accounts Receivable}}{\text{Sales per Day}}$$

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}}$$

$$\text{Working Capital Turnover} = \frac{\text{Sales}}{\text{Working Capital}}$$

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

Financial Analysis

Leverage Ratios

MEASURES ABILITY OF COMPANY TO COVER ITS DEBT OBLIGATIONS AND ITS UTILIZATION OF FINANCIAL LEVERAGE

$$\text{Total Debt / Total Assets} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

$$\text{Interest Bearing Debt / Equity} = \frac{\text{Total Interest Bearing Debt}}{\text{Equity}}$$

$$\text{Times Interest Earned} = \frac{\text{Earning Before Interest \& Taxes (EBIT)}}{\text{Interest Charges}}$$

$$\text{Fixed Charges Coverage} = \frac{\text{EBIT + Fixed Charges}}{\text{Interest + Fixed Charges}}$$

$$\text{Total Assets / Total Equity} = \frac{\text{Total Assets}}{\text{Total Equity}}$$

Financial Analysis

Profitability Ratios

MEASURES HOW EFFECTIVELY COMPANY MANAGES EXPENSES & PROFITS

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Sales}}$$

$$\text{Operating Profit Margin} = \frac{\text{Operating Income}}{\text{Sales}}$$

$$\text{Net Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

$$\text{After Tax Return on Total Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

$$\text{After Tax Return on Equity} = \frac{\text{Net Income to Stockholder's}}{\text{Stockholder's Equity}}$$

Financial Analysis

Return on Equity

MEASURES OVERALL PERFORMANCE OF BUSINESS

$$\frac{\text{Net Income}}{\text{Equity}} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

ROE = Profitability X Turnover X Leverage

Financial Analysis
Growth Rates

Key determinant of value

Volatility of growth rates generates uncertainties and tends to increase investment risk and reduce value

Two methods

- Average annual growth rate
- Compounded average annual growth rate (CAGR)

$$\text{CAGR} = \left[\left[\frac{\text{Amount in period n}}{\text{Amount in period 1}} \right]^{1/(n-1)} - 1.00 \right] \text{X } 100$$

Where n = number of data points
n-1 = number of compounding periods

MARKET APPROACH

GUIDELINE PUBLIC COMPANY METHOD

GUIDELINE MERGER & ACQUISITION METHOD

Market Approach

Principle of Substitution

- A prudent buyer will pay no more for a property than it would cost to acquire a substitute property with the same utility

Guideline Publicly Traded Company Approach

- Based on selling price of publicly traded shares

Guideline Merger and Acquisition Approach

- Based on sell price of acquired companies

Advantages

- Easy to understand, apply and communicate to lay audiences
- Direct method; does not rely on forecasts
- Captures tangible & intangible value
- Relatively simple to research public companies
- Incorporates current market conditions

Disadvantages

- Difficult to find similar companies
- Hidden assumptions, i.e. growth
- M&A data sources for private transactions can be inaccurate & reflect synergies

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Market Approach

MULTIPLES

Comparable multiples of EBIT, EBITDA or Sales for public companies or acquired companies

Comparable investments in similar stage companies serving similar market segments

Adjustments to multiples

- Size
- Marketability
- Key Persons
- Management Team, Key Person
- Product Line Diversification
- Market Diversification
- Company Stage
  - Start-up, Product Development, Shipping Product

SOURCES OF DATA

Larger Company

- Mergerstat / Flashwire
- The Merger Yearbook
- Mergers & Acquisition Magazine
- Buyouts
- Mergers & Acquisition Reports
- Thomson SDC Platinum™
- Mergerstat®

Small & Middle Market

- Pratt's Stats™
- Thomson Done Deals®
- Bizcomps
- IBA Market Database

Investment

- Dow Jones VentureSource®
- Thomson SDC Platinum™

Guideline Public Company Method

Valuation Theory and Procedures

Identify guideline publicly traded companies

Normalize financial statements

Calculate market-derived pricing multiples based on the guideline companies' trading prices and financial fundamentals

Select appropriate market-derived pricing

Calculate and apply size adjustments to market derived multiples to be applied to the subject company's financial fundamentals

Consider qualitative adjustment of selected market-derived pricing multiples to reflect modest additional risk factors inherent in an investment in the subject company compared with an investment in the guideline companies

Calculate indicated values for subject company based on the application of the selected market pricing multiples

Reconcile the different values

Consider necessity of applying discounts and premiums; i.e. marketability, key persons,

Guideline Public Company Method

Identification of guideline publicly traded companies

Identify a group of publicly traded companies similar to subject company

General criteria for selection

- Industry and specific business lines are comparable
- Relative asset size and revenues are comparable or may be size adjusted using equity risk premium data
- Absolute and relative value of earnings and cash flow are comparable or may be size adjusted using equity risk premium data
- Information on each guideline company is available for the entire relevant time period

General criteria for rejection

- Company serves unrelated business
- Company is too diversified
- Company is in poor financial condition
- Company has excess assets, i.e. recent IPO (Initial Public Offering)

Guideline Public Company Method

Identification of guideline publicly traded companies

Further pruning the portfolio

- Size is more or less 10x smaller or 10x larger
- Actively traded with a % of outstanding stock trading over the six to twelve month period prior to valuation date
- Business and product lines
  - Similar competitive position and prospects
  - Similar levels of labor and capital employed
  - Level of technology employed
  - Quality of management team
  - Years in business
  - Similarity in business model
  - Geographical diversification
- Financial
  - Historical growth in revenue and earnings
  - Rate of return on Invested Capital
  - Amount of investment in PPE and Inventory
  - Liquidity

Guideline Public Company Method Market Value of Invested Capital Method

Invested capital valuation method is commonly used in valuation of closely held companies to minimize differences between subject company and guideline companies, which may have significantly different capital structures

With effects of leverage minimized, invested capital valuation method results in value indication for a company's total capital

+ Market value short-term interest-bearing debt
+ Market value long-term interest-bearing debt
+ Market value of preferred stock outstanding
+ <u>Market value of common stock outstanding</u>

= **Market value of invested capital (MVIC)**

Assets	Liabilities
Current Assets Cash Accounts Receivable Inventory Other Assets	Current Liabilities Accounts Payable Income Taxes Payable Other Current Liabilities
	Interest Bearing Debt - Short Term
Fixed Assets Equipment Buildings Land	Non-current Liabilities Interest Bearing Debt - Long Term
Other Assets Investments Life Insurance	Stockholder's Equity Preferred Stock Common Stock
Intangible Assets Identifiable Non-identifiable	

Invested Capital

Guideline Public Company Method
Market Derived Pricing Multiples

INVESTED CAPITAL MULTIPLES

More appropriate when valuing a control interest and/or there is a dissimilarity in capital structure between subject company and guideline companies

- MVIC to EBIT
- MVIC to EBITDA
- MVIC to Revenue
- MVIC to NOPAT
- MVIC to tangible book value and debt

EQUITY MULTIPLES

More appropriate when valuing a minority interest and/or there is a similarity in capital structure between subject company and guideline companies

- Price to Net Earnings
- Price to Pretax Earnings
- Price to Cash Flow
- Price to Operating Income
- Price to Book Value
- Price to dividend-paying capacity
- Price to Gross Profit

Guideline Public Company Method

Market Derived Pricing Multiples

MVIC Multiples

- MVIC / Earnings Before Interest and Taxes (EBIT)
- MVIC / Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA)
- MVIC / Revenue

Market-derived pricing multiples calculated on

- Last Twelve Months (LTM)
- Average of previous years
  - # of years captures full business cycle or # years similar to guideline public companies

Guideline Public Company Method
Selection of Appropriate Market Derived Pricing

MVIC / SALES

Appropriate metric?

Use regression analysis to supports a correlation or lack or correlation between size adjusted MVIC/Sales multiples and the size adjusted returns on Sales

Remove individual companies from portfolio to achieve correlation

- Resulting R2 values > .9
- Recognize that sample size of data points need be statistically sufficient to conclude correlation even if R2 values exceed .90
- From this analysis, the opinion may be that the MVIC/Sales multiples applied in Guideline Public Company Approach is not conclusive

Guideline Public Company Method

Size Adjusted Pricing Multiples

Small size is associated with a number of growth factors

- Limited R&D and Marketing resources
- Reduced access to capital
- Lack of geographical or global diversification
- Lack of product diversification
- Lack of management depth and breadth
- Companies' invested capital market multiples are adjusted for size

For each guideline company, data from *Duff and Phelps Risk Premium Report* and *SBBI Yearbook* is used to calculate a factor representing the relative difference in size between the guideline company and subject company

If the company is significantly smaller than the companies used in risk premium data, a regression analysis is applied to further adjust for relative size of

- Current year's book value of common equity
- 5 Year average of net income
- Current year's total assets
- 5 Year average of EBITDA
- Current year's sales
- # of employees

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Guideline Public Company Method

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- Current year's sales
- # of employees

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Guideline Public Company Method Size Adjusted Pricing Multiples

Size adjustments are only made to income statement-based pricing multiples

Based on relationship between capitalization rates and pricing multiples

$$\text{Value} = \frac{\text{Benefit}}{K_g - g_g}$$

$$MM = \frac{1}{K_g - g_g}$$

$$MM_{size} = \frac{1}{K_{GPC} + (K_{\text{subject size}} - K_{\text{GPC size}}) - g_{GPC}}$$

K_{GPC} = risk and benefit adjusted required rate of return
g_{GPC} = present value weighted perpetual growth rate
$K_{\text{subject size}}$ = return in excess of risk free rate, subject size decile
$K_{\text{GPC size}}$ = return in excess of risk free rate, GPC size decile

Decile	Market Capitalization of Largest Company in Decile ($000)	Realized Return in Excess of Risk Free Rate	
1	472,518,672	6.10%	
2	20,234,526	7.95%	
3	9,206,713	8.51%	
4	5,012,577	8.86%	
5	3,422,743	9.64%	
6	2,411,794	9.93%	
7	1,633,320	10.26%	
8	1,128,765	11.38%	
9	723,258	12.07%	GPC
10	363,479	15.77%	Subject

Source: Ibbotson SBBI Valuation Yearbook

Market Multiple (MM) = 10.0
Market Cap $_{GPC}$ = $500M
Market Cap $_{Subject}$ < $363M
Size Adjusted Market Multiple (MM_{size}) = 6.95

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Guideline Public Company Method

Reconciliation

Reconciliation of differing value indicators derived form same or different methods and approaches relies on valuator's judgment

Weighing of value indicators may be implicit or explicit

Critical factor is weighting be the result of informed judgment are clearly explained

Weights are dependent on appraiser's sense of relative confidence

- Depends on theoretical and practical understanding of key determinants of value for the type of industry and company
- For example, tendency is to
  - Value service companies on revenues
  - Value capital intensive enterprises on net income and/or book value

Revenue Ruling 59-60 does not bar a mathematical weighting of valuation results, but bars a blind arithmetic mean of the results that would be appropriate only by coincidence

If appraiser implicitly weights the results and explains as such, an explicit weighting can be elicited by a good attorney on cross examination

Guideline Public Company Method
Discounts and Premiums

Qualitative adjustment to reflect additional risk factors inherent in investment in subject company compared with investment in guideline companies

Discounts and premiums are multiplicative factors

- Marketability Discount
  - Market Approach employing guideline public companies yields minority, marketable value.
  - No discount for lack of control is necessary.
  - Discount for lack of marketability is applied
- S Corporation Discount or Premium
- Key Person Discount
  - Magnitude of the key person discount can be quantified as difference in present value of future cash flows with and without the involvement of key person.
  - Bolten/Wang Study, August 1, 1996 to November 28, 1996
    - With fewer than six persons on the management team, the average decrease in stock value for public firms was 9.43% when key person left
    - With less than $280 million capitalization, the decrease in stock value for public firms was 8.65%
    - The smaller the firm, the greater the impact
    - The average decrease for a private firm is greater than for a public firm
    - Degree of negative impact increases as number on management team decreases
  - Larson/Wright Study, last update September 2001
    - Small companies (maximum of 500 employees) and medium sized privately held companies
    - Degree of negative impact on key person leaving was 4 to 6%

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Guideline Acquired Company Method

Valuation Theory and Procedures

Same theory and procedures as Guideline Public Company Method

Compared to public data sources, M&A data sources for private transactions

- Are sparse
  - If acquired private company is worth more than 10% of public company, then public acquirer must file 8-K with details of transaction
  - No legal requirement for private companies acquiring private companies (most transactions)
- Can be inaccurate & reflect synergies
- No financial depth; cannot see trends
- Older data may have unknown factors influencing growth such as bubble market
- Terms often unstated that include leases, real estate, consulting agreements, non-competes
- Not enough information to calculate cash price

Guideline Acquired Company Method

Sources of Data

Sample Transaction Data Found in Commercial Databases

Closed Date	Market Segment	Target / Issuer	Buyers / Investors	Total Transaction Value ($USDmm, Historical rate)	Transaction Comments	Business Description [Target/Issuer]	TEV/LTM Total Revenues [Latest] (x) [Target / Issuer]	TEV/LTM EBITDA [Latest] (x) [Target / Issuer]	TEV/LTM EBIT [Latest] (x) [Target / Issuer]	Implied Enterprise Value ($USM, Historical rate)	Transaction Status
12/08/10	Metrology	Keithley Instruments Inc.	Danaher Corp. (NYSE:DHR)	367.55	Danaher Corp. (NYSE: DHR) signed a definitive agreement to acquire Keithley Instruments Inc. (NYSE: KEI) from Joe Keithley and other shareholders for approximately $350 million in cash on September 29, 2010. Under the terms of agreement, Danaher will acquire all of the outstanding common shares, class B common shares, restricted share units and performance award units of Keithley at $21.6 per share in cash. Danaher will also acquire options of Keithley. Keithley Instruments will pay $10 million as termination fee to Danaher Corporation. Upon closing Keithley will be part of Danaher's Tektronix business and operate as a wholly owned subsidiary of Danaher. A partnership affiliated with Joseph P. Keithley has agreed to vote a number of class B common shares representing 19.99% of the voting power of Keithley Instruments Inc. in favor of the merger. The acquisition is subject to customary closing conditions, including the receipt of regulatory approvals, Hart-Scott-Rodino Antitrust Improvements Act of 1976 and adoption of the merger agreement by Keithley's shareholders. The acquisition has been approved by the Board of Danaher and unanimously approved by Board of Directors of Keithley. As of November 19, 2010, Keithley's shareholders approved the deal. The transaction received early clearance of antitrust concerns under Hart-Scott-Rodino Act on December 6, 2010.The acquisition is expected to be completed during the fourth quarter of calendar 2010. Stifel Nicolaus Weisel acted as the financial advisor and received a fee of $10.97 million and John M. Gherlein of Baker & Hostetler LLP acted as the legal advisor for Keithley Instruments Inc. Joseph A. Coco and Thomas W. Greenberg of Skadden, Arps, Slate, Meagher & Flom LLP acted as the legal advisors for Danaher. James Dougherty of Jones Day acted as legal advisor to Joe Keithley, Chairman and controlling shareholder of Keithley Instruments Inc. Computershare Trust Company, Inc. acted as the transfer agent for Keithley and Georgeson Shareholder Communications Inc. acted as its information agent and received	Keithley Instruments, Inc. designs, develops, manufactures, and markets electronic instruments and systems for use in production testing, process monitoring, product development, and research. The company offers approximately 500 products to source, measure, connect, control, or communicate direct current, radio frequency (RF), or optical signals. Its products include integrated systems solutions comprising instruments and personal computer plug-in boards that could be used as system components or stand-alone solutions; parametric test systems; and semiconductor characterization system. The company also offers characterization and curve tracer software for component test applications, parametric test system, arbitrary waveform/function generator, system switch/multimeter and plug-in card family, and SourceMeter instrument line. Its customers include engineers, technicians, and scientists in manufacturing, product development, and research functions. Keithley Instruments markets its products through its sales personnel and through direct marketing and catalog mailings in the United States, as well as directly, and through distributors and manufacturer representatives internationally. The company was founded in 1946 and is based in Solon, Ohio. As of December 8, 2010, Keithley Instruments Inc. operates as a subsidiary of Danaher Corp.	2.25	11.90	13.20	325.96	Closed
10/05/10	Metrology	Applied Instrument Technologies	The Thompson Group of Companies	-	The Thompson Group of Companies acquired Applied Instrument Technologies from Hamilton Sundstrand Corporation on October 5, 2010. The financial terms of the transaction were not disclosed. Applied Instrument Technologies will be organized as a standalone company within The Thompson Group.	Applied Instrument Technologies designs, manufactures, sells, and services process analytical technology solutions for quantitative and qualitative analysis applications. The company offers Fourier transform infrared analyzers for the quantitative and qualitative analysis of solids, liquids, and gases in the mid and near infrared regions; and process gas chromatographs for analyzing and reporting component concentrations and physical properties of process gas and liquid streams in various applications in the natural gas, refining, petrochemical, chemical, and pharmaceutical industries. It also provides process mass spectrometers for monitoring multi-component gas streams in steel and biopharmaceutical gas industries; lab and online near-infrared analyzers for analyzing the refinery process streams, such as gasoline and diesel fuel; and lab and online Raman analyzers for real time monitoring of physical properties and chemical composition of liquids, emulsions, slurries, and solids. The company sells its products through agents and distributors in the United States, Canada, Africa, the Pacific, Europe, India, Latin America, South America, the Middle East, Russia, Belarus, and Ukraine. The company is based in Pomona, California. As of October 5, 2010, Applied Instrument Technologies operates as a subsidiary of The Thompson Group of Companies.	-	-	-	-	Closed

Source: Standard & Poor's CapitalIQ®

Guideline Acquired Company Method

Sources of Data

Sample Transaction Data Found in Commercial Databases

Company	Description	Round Type	Date	Amount Raised	Post Valuation	Stage
Satoris	Developer of blood based protein biomarkers for neurological disorders. First target is Alzheimer's disease.	Series A	12/17/2007	$ 5,200,000	$ 13,800,000	Product development
		Bridge	4/3/2009	$ 1,130,000	N/A	
QuadraSpec	Provider of bioassay diagnostics platform for drug discovery and diagnostics.	Seed	8/15/2004	$ 50,000	W/H	Product development
		Series A	2/17/2005	$ 1,500,000	$ 4,300,000	
		Series B	8/31/2005	$ 3,900,000	$ 9,400,000	
		Debt	1/1/2005	$ 1,100,000	N/A	
		Series C	5/31/2006	$ 7,800,000	$ 17,200,000	
		Gov G	7/1/2006	$ 930,000	N/A	
		Series D	9/30/2007	$ 7,900,000	N/A	Shipping product
		Series E	6/30/2008	$ 4,900,000	W/H	
ForteBIO	Provider of analytical systems designed to accelerate the development of therapeutics.	Seed	6/1/2002	$ 160,000	N/A	Product Development
		Bridge	4/26/2004	$ 8,000	N/A	Product Development
		Series 1	5/7/2004	$ 5,500,000	W/H	Product Development
		Series 2	10/18/2005	$ 17,300,000	W/H	Shipping Product
		Debt	1/1/2007	$ 6,000,000	N/A	Shipping Product
		Series 3	9/24/2008	$ 25,000,000	N/A	Shipping Product
RainDance Technologies	Provider of microdroplet-based solutions that accelerate human health and disease research.	Series A	4/17/2007	$ 23,660,000	N/A	Product development
		Series B	4/24/2009	$ 12,000,000	$ 32,750,000	Product development
BioSystem Development LLC	Provider of tools and products to meet critical and growing analytical needs of pharma development. Platform is disposable micro-chromatography cartridges & automation, enables HTS for bioprocess dev, biomarkers, and life science research.		10/30/2009	$ 1,400,000	$ 6,150,000	Shipping product

Source: Dow Jones VentureSource®

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THEORY

FORECASTING

DISCOUNT RATES

PRIVATE COST OF CAPITAL

INCOME APPROACH

Income Approach

Based on present value of all expected benefits from business discounted or capitalized at a rate that reflects the business' risk

Discounted Future Cash Flows (DCF)

- Projected income stream over a period, t
- Discount rate

Σ (Net Cash Flow$_n$ / (1 + Discount Rate)^n) + (Terminal Value $_t$ / (1 + Discount Rate)^t)

Capital Asset Pricing Model (CAPM)

- Estimated income for a single period
- Capitalization rate

Net Cash Flow$_1$ / (Perpetual Growth Rate – Discount Rate)

Advantages

- "Pure" value theory
- Captures tangible and intangible value

Disadvantages

- Estimating discount rates is complex
- Projecting cash flows is difficult
- Perceived as subjective

Income Approach

Capital Asset Pricing Model

Technology Businesses

- Forecasted growth and cash flows are not predicted to be in a stable state
- Typically very high growth forecast early in product and technology life cycles tapering as peak market share achieved (S-Curve)

Private Businesses

- Owners are undiversified with typically one primary asset held in an undiversified portfolio

Capital Asset Pricing Model (CAPM)

- Assumes cash flows are predicted to be in a stable state
- Assumes stocks are held in a well-diversified portfolio
- Accommodates only risk and return traits of portfolios, not individual stocks
- Rarely applicable for privately held technology companies where cash flows are rarely predicted to be in a stable state and business is majority of owner's undiversified portfolio

Income Approach
Discounted Cash Flow Model

Formulas used in DCF Valuation Models

Capitalization Rate = Discount Rate - Growth Rate

Terminal Value = (CashFlow:Capital * (1+Growth Rate))/(Discount Rate-Growth rate) for Y_n w/growth

Present Value (PV) Factor = 1/(1 + Discount Rate) ^#periods

PV Cash Flows:Capital = NPV(Discount Rate, CashFlow:CapitalY1:Y_{N-1})

PV Terminal Value = Terminal Value * PV Factor

Total = PV Cash Flows:Capital + PV Terminal Value

Discounted Cash Flow Forecast

Methods

- Percent of sales
- Monte Carlo simulation
- Probability weighted scenarios

Develop Balance Sheet Forecast

- Working Capital
  - Cash-Cash Expenses-Cash Turnover
  - A/R-Sales -A/R Turnover
  - Inventory-COGS-Inventory Turnover
  - A/P-Total Expenses (less payroll)-A/P Turnover
- Fixed Assets
  - Replace and/or expand
  - Historical may provide reasonable basis
  - Reconcile with depreciation
- Debt
  - Existing capital structure
  - Operating debt to fund cash flow deficits
  - Interest forecast

Develop Income Forecast

- Determine period
- Develop revenue forecast
  - Basis, i.e., units and retail pricing
  - How will growth be achieved
  - Evaluate historical growth
    - Average or median annual
    - Compounded annual
    - Log linear regression
- Develop expense forecast
  - Variable expenses
    - Historical may not continue
    - May not be linear with revenues
  - Fixed / Semi-variable expenses
  - Depreciation & amortization
  - Interest expense
  - Taxes

Develop Cash Flow Forecast

- Function of forecasted revenue, expenses and balance sheet

Calculate financial rations and compare with peers

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Discounted Cash Flow
Discount Rate, Build-Up Method

Discount forecasted future cash flows for market, technology and business risk

- Systematic Risk
  - Un-diversifiable and inherent to the subject company's entire market
- Unsystematic Risk
  - Company specific risk that may be reduced through diversification
  - Risk of random negative events particular to subject company such as failed product launches, lawsuits, and departure of key personnel

Discount Rate =
Σ Systematic Risk + Σ Unsystematic Risk

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Discounted Cash Flow
Build-Up Method, Company Specific Risk Premium

Qualitative factors

- Management depth
- Management expertise
- Access to capital
- Customer concentration
- Customer pricing leverage
- Customer loyalty and stability
- Level of current competition
- Potential new competitors
- Vendor coopetition and supply chain
- Supplier concentration
- Supplier pricing advantage
- Product or service diversification
- Life cycle of current products or services
- Geographical distribution
- Demographics
- Availability of labor
- Employee stability
- Internal and external culture

More Qualitative Factors

- Economic factors
- Industry and government regulation
- Fixed assets' age and condition
- Strength of intangible assets
- Distribution system
- IT systems
- Technology life cycle
- Location
- Legal/litigation issues
- Internal controls
- Currency risk

Quantify

- Back in from published studies
- Butler-Pinkerton Model
  - Based on the Capital Asset Pricing Model
  - Not considered for privately held technology companies for the same reasons that the Guideline M&A approach is not heavily weighted and that the CAPM is not considered

CERES

Discounted Cash Flow

Build-Up Method, Company Specific Risk Premium

<table>
<tr><th>Stage of Development</th><th>Characteristics</th><th colspan="2">Plummer[1]</th><th colspan="2">Scherlis and Sahlman[2]</th><th colspan="2">HVA Study Actual Returns[3]</th><th colspan="2">Babson College[4]</th><th colspan="2">Frei & Leleux[5]</th><th colspan="2">Seiffer Software[6]</th></tr>
<tr><td>Start-Up</td><td>Pre-prototype</td><td>50%</td><td>70%</td><td>50%</td><td>70%</td><td>100%</td><td>125%</td><td>60%</td><td>80%</td><td>70%</td><td>100%</td><td>60%</td><td>80%</td></tr>
<tr><td>Early - Development</td><td>Pre-commercialization</td><td rowspan="2">40%</td><td rowspan="2">60%</td><td rowspan="2">40%</td><td rowspan="2">60%</td><td rowspan="2" colspan="2">60%</td><td rowspan="2" colspan="2">50%</td><td>50%</td><td>70%</td><td>50%</td><td>60%</td></tr>
<tr><td>First Stage</td><td>Commercialization</td><td>40%</td><td>60%</td><td>40%</td><td>50%</td></tr>
<tr><td>Expansion</td><td>Shipping Product</td><td>35%</td><td>50%</td><td>30%</td><td>50%</td><td colspan="2">50%</td><td colspan="2">40%</td><td>35%</td><td>50%</td><td>30%</td><td>40%</td></tr>
<tr><td>Mezzanine / IPO</td><td>Profitable</td><td>25%</td><td>35%</td><td>20%</td><td>35%</td><td>30%</td><td>40%</td><td>25%</td><td>30%</td><td>25%</td><td>40%</td><td>25%</td><td>30%</td></tr>
</table>

[1]Plummer, James L., QED Report on Venture Capital Financial Analysts (Palo Alto QED Research, Inc. 1997).
[2]Scherlis, Daniel R. and William A. Sahlman, A Method for Valuing High-Risk, Long Term Investments: The Venture Capital Method (Boston: Harvard Business School Publishing, 1987).
[3]Houlhan Valuation Advisors and Venture One Study on pricing of venture capital investments in technology and life science companies in the United States, January 1993 to January 1996. Note only successful VC backed companies included in this study.
[4]William Bygrave, Babson College, as quoted in the Expert Report by PricewaterhouseCoopers, Cleas BioLimited Prospectus and Investment Statement, November 14, 2002.
[5]Frei, Patrik and Benoit, Leieux, Evaluating the Company: Starting a Business in the Life Sciences - from Idea to Market. Quessen, H. (edt) 42-55 (Edison Cantor, Verlag, Aulendorf, Germany, 2003).
[6]Seiffer, John. "The Business of Software: The Venture Capital Race o' Return." November 21, 2005.

Income Approach
Sustainable Growth Rate

Return of Equity {Annual Earnings/Book Value of Equity} X Plow Back Ratio {(Annual Earnings – Annual Dividends) / (Annual Earnings)}

- Use when the only source of earnings growth is reinvestment of earnings into existing business and cost structure is consistent in previous period that represents a full business cycle and forecasted period

Overall long term economic growth rate that is long term expected inflation rate + growth rate in real Gross Domestic Product from 1929 to the effective date of valuation

Discounted Cash Flow
Discount Rate, Build-Up Method

		SBBI Approach	Duff & Phelps Build-Up 1 Approach	Duff & Phelps Build-Up 1 Approach - Regression	Duff & Phelps Build-Up 2 Approach	Duff & Phelps Build-Up 2 Approach - Regression		
Risk	Discount Rate Components	Rate						
Systematic	Risk-Free Rate (R_f)	4.0%	4.0%	4.0%	4.0%	4.0%		
	+ Expected Equity Risk Premium (ERP_e)	5.5%						
	+ Expected Equity Risk Premium (ERP_e)				5.50%	5.50%		
	+ Beta Adjusted Size Risk Premium for 10zth decile (SRP_{SBBI})	11.98%						
	+ Risk Premium Adjusted for Size (RP_A)		12.55%					
	+ Risk Premium Adjusted for Size (RP_A)			16.55%				
	+ Risk Premium Adjusted for Size (RP_B)				5.46%			
	+ Risk Premium Adjusted for Size (RP_B)					9.62%		
	+ Industry Risk Premium (IRP)	-0.22%	-0.22%	-0.22%	-0.22%	-0.22%		
Unsystematic	+ / - Company Specific Risk Premium (CSRP)	10.00%	10.00%	10.00%	10.00%	10.00%		
		31.26%	26.33%	30.33%	24.74%	28.90%	Simple Average of D&P regression methods:	29.61%

Discounted Cash Flow
Discount Rate, Build-Up Method

Terminal Value as Growing Perpetuity Cash Flow			*Sales continue to grow beyond forecast*
Discount Rate		24.2%	
Growth Rate		5.9%	*Long term expected inflation rate of 2.6% plus growth rate in real Gross Domestic Product from 1929 to 2007 of 3.3%*
Capitalization Rate		18%	*Discount Rate - Growth Rate*
Terminal Value	$	57,729,351	*(CashFlow:Capital*(1+growth rate))/(discount rate-growth rate) for Yn + w/growth*
# Periods		5	
PV Factor		0.338	*1/(1+discountrate)^#periods*
PV Cash Flows:Capital	$	1,856,932	*NPV(discount rate, CashFlow:CapitalY1:YN-1)*
PV Terminal Value	$	19,499,150	*Terminal Value*PV Factor*
Subtotal	$	21,356,081	*PV Cash Flows:Capital to PV Terminal Value*
Less Market Value Debt	$	1,503,987	
Subtotal	$	19,852,000	
Less Liquidity Discount	$	(4,662,572)	*Discount for Lack of Marketability*
Total Value Common Stock	**$**	**15,189,428**	

Income Approach
Private Cost of Capital

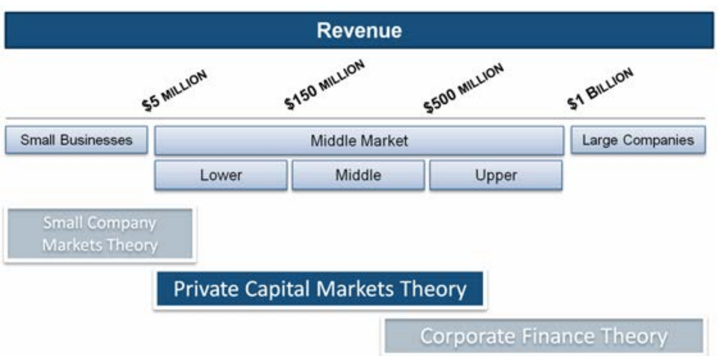
PRIVATE COST OF CAPITAL

Applied to private companies

New model introduced by Rob Slee and John Paglia, "Private Cost of Capital Model." The Value Examiner. March / April 2010

Based on the expected rate of return that private capital markets require in order to attract funds to a particular investment

Addresses fundamental issue that public and private capital markets are not substitutes



BUILD-UP METHOD
& CAPITAL ASSET PRICING MODEL

Applied to public and private companies

The accepted and compliant methods to value both public and private businesses

Based on expected rate of return of public markets

Assumes that public and private markets are substitutes

Corporate Finance Theory grounded in assumptions around single efficient public market ignores fundamental differences with private companies

- No access to public markets and never plan to IPO
- Business is managed to minimize taxes and not maximize profits
- Business is not necessarily C-Corporation
- Owners have unlimited liability
- Owners are undiversified with typically one primary asset
- Owners re actively manage business

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Income Approach
Private Cost of Capital

Pepperdine PCOC Survey

Web based survey of tens of thousands of capital providers

- Banks
- Asset based lenders
- Mezzanine investors
- Private equity groups
- Venture capitalists
- Factoring companies
- Business owners
- Investment banks
- Business valuation professionals

Investigates for each private capital market segment, the important benchmarks that must be met in order to qualify for capital

- Amount of capital typically accessible
- Required returns for extending capital in the current economic environment
- Outlooks on demand for various capital types
- Interest rates
- Economy in general

Private Equity, for example

- 327 firms responded
- Median PE realized return last 12 months, 25%
- Median expected return next 12 months, 27%
- 68% control transactions
- 70% say demand for business investment is up from six months ago, as are investment standards, appetite for risk, and quality of companies seeking investment
- 33% report making zero investments in last 6 months
- Report following deal multiples of EBITDA in manufacturing industries

Manufacturing Companies	$1M EBITDA	$5M EBITDA	$10M EBITDA	$25M EBITDA
1st quartile	4.0	4.7	4.3	5.0
Median	4.0	5.0	5.0	6.0
3rd quartile	4.8	5.0	5.0	6.0

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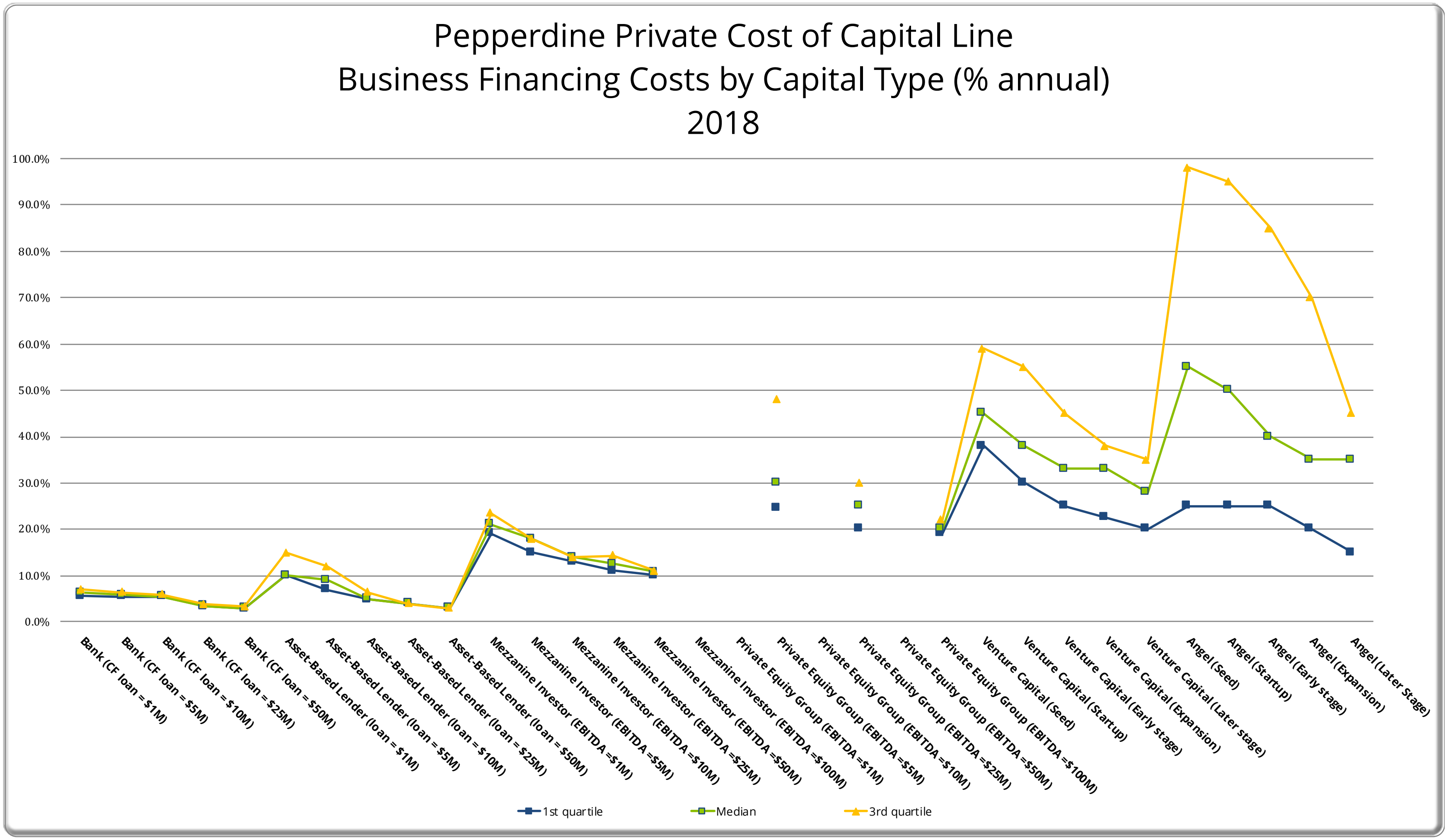
Valuation - Income Approach
Private Cost of Capital



Income Approach
Private Cost of Capital

First, determine the appropriate CAP by reviewing credit boxes described in most current Pepperdine survey

Next, select appropriate median CAP from survey results

Then, adjust survey CAP by SCAPi to reflect company specific risk based on comparison between subject company and survey

Use upper and lower quartile returns as a guide to this adjustment

Determine market value of each CAP

Derive percentage of capital structure for each CAP

Finally, add individual percentages to derive PCOC

$$PCOC = \sum_{i=1}^{N} \left[(CAP_i + SCAP_i) * \frac{MV_i}{\sum_{j=1}^{N} MV_j} \right]$$

Where
N = number of sources of capital
MV_i = market value outstanding securities i
CAP_i = median expected return for capital type i
$SCAP_i$ = specific CAP_i risk adjustment for capital type i

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International Costs of Equity Capital Methods

Method	Strength	Weakness
Global CAPM	Developed markets, integrated countries, multi-national conglomerates; subject company operates in many countries	Emerging markets, substantive differences across countries, no local bond / stock market
Single Country CAPM	Same county for subject and investor, developed markets, local bond / stock market, substantive local factors	Emerging markets, no local bond / stock market
Country or Sovereign Yield Spread	Intuitive and easily implemented, readily understood by broad audience	Default risk is not good proxy for subject locally
Relative Volatility	Developed markets, intuitive and easily implemented, readily understood by broad audience	Emerging markets, not well-diversified local stock market, no or shallow history of stock market returns
Country Credit Rating	Intuitive, readily defensible to educated audience, widest applicability	Complex, not readily understood by broad audience, quality history of stock market returns globally

CERES

RECONCILING APPROACHES

LEVELS OF VALUE

DISCOUNTS AND PREMIUMS

REACHING A CONCLUSION OF VALUE

Reaching a Conclusion of Value

Statistical Measures and Tools

Medians and percentiles

- Less influenced by outliers

Averages and composites

- Averages may weight outliers too heavily

Harmonic mean of reciprocal of average of multiples

- Useful when multiples are particularly dispersed, but seldom used

Coefficient of variation

- Measures the dispersion on the multiples
- Computed by dividing the standard deviation of the data by the mean

Reaching a Conclusion of Value Reconciliation

Reconciliation of differing value indicators derived form same or different methods and approaches relies on valuator's judgment

Weighing of value indicators may be implicit or explicit

Critical factor is weighting be the result of informed judgment are clearly explained

Weights are dependent on appraiser's sense of relative confidence

- Depends on theoretical and practical understanding of key determinants of value for the type of industry and company
- For example, tendency is to
  - Value service companies on revenues
  - Value capital intensive enterprises on net income and/or book value

Revenue Ruling 59-60 does not bar a mathematical weighting of valuation results, but bars a blind arithmetic mean of the results that would be appropriate only by coincidence

If appraiser implicitly weights the results and explains as such, an explicit weighting can be elicited by a good attorney on cross examination

Reaching a Conclusion of Value
Discounts and Premiums

Qualitative adjustment to reflect additional risk factors inherent in investment in subject company compared with investment in guideline companies

Discounts and premiums are multiplicative factors

- Marketability Discount (DLOM)
  - Market Approach employing guideline public companies yields minority, marketable value
  - No discount for lack of control is necessary
  - Discount for lack of marketability is applied
- Control Premium / Discount for Lack of Control (DLOC)
- Key Person Discount
  - Magnitude of the key person discount can be quantified as difference in present value of future cash flows with and without the involvement of key person.
  - Bolten/Wang Study, August 1, 1996 to November 28, 1996
    - With fewer than six persons on the management team, the average decrease in stock value for public firms was 9.43% when key person left
    - With less than $280 million capitalization, the decrease in stock value for public firms was 8.65%
    - The smaller the firm, the greater the impact
    - The average decrease for a private firm is greater than for a public firm
    - Degree of negative impact increases as number on management team decreases
  - Larson/Wright Study, last update September 2001
    - Small companies (maximum of 500 employees) and medium sized privately held companies
    - Degree of negative impact on key person leaving was 4 to 6%

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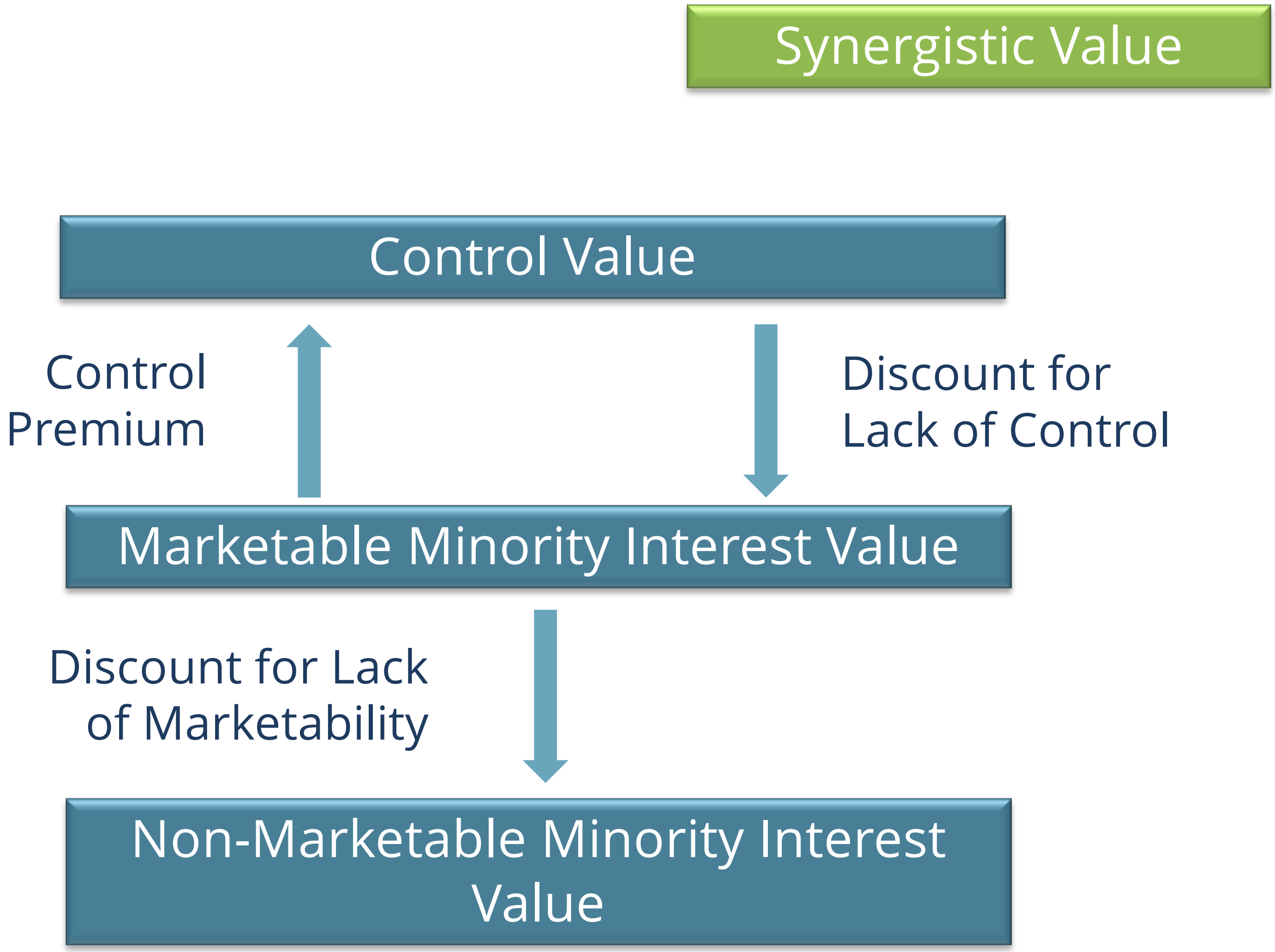
Reaching a Conclusion of Value
Discounts and Premiums, Levels of Value



Reaching a Conclusion of Value
Discounts and Premiums, Levels of Value

Approach / Method	Assumptions	Resulting Value
Income Approach	Control Cash Flows	Control (Synergies could indicate Investment Value)
	Minority Cash Flows	Minority, Marketable
Market Approach: Guideline Public Company Method	Control Cash Flows	Control (Synergies could indicate Investment Value)
	Minority Cash Flows	Minority, Marketable
Market Approach: Guideline M & A Method	Control Transacted	Control (Synergies could indicate Investment Value)

QUESTIONS

Have a question?

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