



Private Company Valuation

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Process of Valuing Private Companies

- Choosing the right model
 - Valuing the Firm versus Valuing Equity
 - Steady State, Two-Stage or Three-Stage
- Estimating a Discount Rate
 - Cost of Equity
 - Estimating Betas
 - Cost of Debt
 - Estimating Default Risk
 - Estimating an after-tax cost of debt
 - Cost of Capital
 - Estimating a Debt Ratio
- Estimating Cash Flows
- Completing the Valuation: Depends upon why and for whom the valuation is being done.

Estimating Cost of Equity for a Private Firm

- Most models of risk and return (including the CAPM and the APM) use past prices of an asset to estimate its risk parameters (beta(s)).
- Private firms and divisions of firms are not traded, and thus do not have past prices.
- Thus, risk estimation has to be based upon an approach that does not require past prices

I. Comparable Firm Betas

- Collect a group of publicly traded comparable firms, preferably in the same line of business, but more generally, affected by the same economic forces that affect the firm being valued.
 - A Simple Test: To see if the group of comparable firms is truly comparable, estimate a correlation between the revenues or operating income of the comparable firms and the firm being valued. If it is high (and positive), of course, you have comparable firms.
- If the private firm operates in more than one business line collect comparable firms for each business line

Estimating comparable firm betas

- Estimate the average beta for the publicly traded comparable firms.
- Estimate the average market value debt-equity ratio of these comparable firms, and calculate the unlevered beta for the business.

$$\beta_{\text{unlevered}} = \beta_{\text{levered}} / (1 + (1 - \text{tax rate}) (\text{Debt/Equity}))$$

- Estimate a debt-equity ratio for the private firm, using one of two assumptions:
 - Assume that the private firm will move to the industry average debt ratio. The beta for the private firm will converge on the industry average beta.

$$\beta_{\text{private firm}} = \beta_{\text{unlevered}} (1 + (1 - \text{tax rate}) (\text{Industry Average Debt/Equity}))$$

- Estimate the optimal debt ratio for the private firm, based upon its operating income and cost of capital.

$$\beta_{\text{private firm}} = \beta_{\text{unlevered}} (1 + (1 - \text{tax rate}) (\text{Optimal Debt/Equity}))$$

- Step 5: Estimate a cost of equity based upon this beta.

Accounting Betas

- Step 1: Collect accounting earnings for the private company for as long as there is a history.
- Step 2: Collect accounting earnings for the S&P 500 for the same time period.
- Step 3: Regress changes in earnings for the private company against changes in the S&P 500.
- Step 4: The slope of the regression is the accounting beta
- There are two serious limitations -
 - (a) The number of observations in the regression is small
 - (b) Accountants smooth earnings.

Estimating a Beta for the NY Yankees

- You have three choices for comparable firms:
 - Firms that derive a significant portion of their revenues from baseball (Traded baseball teams, baseball cards & memorabilia...)
 - Firms that derive a significant portion of their revenues from sports
 - Firms that derive a significant portion of their revenues from entertainment.

Comparable firms	Levered Beta	Unlevered Beta
Baseball firms (2)	0.70	0.64
Sports firms (22)	0.98	0.90
Entertainment firms (91)	0.87	0.79

Management target

- Levered Beta for Yankees = $0.90 (1 + (1-.4) (.25)) = 1.04$

- Cost of Equity = $6.00\% + 1.04 (4\%) = 10.16\%$

Estimating a beta for InfoSoft: A private software firm

- Comparable firms include all software firms, with market capitalization of less than \$ 500 million.
- The average beta for these firms is 1.29 and the average debt to equity ratio for these firms is 7.09%. With a 35% tax rate, this yields an unlevered beta of

$$\text{Unlevered Beta} = 1.29 / (1 + (1 - .35) (.0709)) = 1.24$$

- We will assume that InfoSoft will have a debt to equity ratio comparable to the average for the comparable firms and a similar tax rate, which results in a levered beta of 1.29.
- Cost of Equity = 6.00% + 1.29 (4%) = 11.16%

Is beta a good measure of risk for a private firm?

- The beta of a firm measures only market risk, and is based upon the assumption that the investor in the business is well diversified. Given that private firm owners often have all or the bulk of their wealth invested in the private business, would you expect their perceived costs of equity to be higher or lower than the costs of equity from using betas?
 - Higher
 - Lower

Total Risk versus Market Risk

- Adjust the beta to reflect total risk rather than market risk. This adjustment is a relatively simple one, since the correlation with the market measures the proportion of the risk that is market risk.

Total Beta = Market Beta / Correlation with market

- In the New York Yankees example, where the market beta is 0.85 and the R-squared for comparable firms is 25% (correlation is therefore 0.5),
 - Total Unlevered Beta = $0.90 / 0.5 = 1.80$
 - Total Levered Beta = $1.80 (1 + (1-0.4)(0.25)) = 2.07$
 - Total Cost of Equity = $6\% + 2.07 (4\%) = 14.28\%$

When would you use this total risk measure?

- Under which of the following scenarios are you most likely to use the total risk measure:
 - when valuing a private firm for an initial public offering
 - when valuing a private firm for sale to a publicly traded firm
 - when valuing a private firm for sale to another private investor
- Assume that you own a private business. What does this tell you about the best potential buyer for your business?

Estimating the Cost of Debt for a Private Firm

- Basic Problem: Private firms generally do not access public debt markets, and are therefore not rated.
- Most debt on the books is bank debt, and the interest expense on this debt might not reflect the rate at which they can borrow (especially if the bank debt is old.)

Estimation Options for Cost of Debt

- Solution 1: Assume that the private firm can borrow at the same rate as similar firms (in terms of size) in the industry.

Cost of Debt for Private firm = Cost of Debt for similar firms in the industry

- Solution 2: Estimate an appropriate bond rating for the company, based upon financial ratios, and use the interest rate estimated bond rating.

Cost of Debt for Private firm = Interest Rate based upon estimated bond rating (If using optimal debt ratio, use corresponding rating)

- Solution 3: If the debt on the books of the company is long term and recent, the cost of debt can be calculated using the interest expense and the debt outstanding.

Cost of Debt for Private firm = Interest Expense / Outstanding Debt

If the firm borrowed the money towards the end of the financial year, the interest expenses for the year will not reflect the interest rate on the debt.

Estimating a Cost of Debt for Yankees and InfoSoft

- For the Yankee's, we will use the interest rate from the most recent loans that the firm has taken on:
 - Interest rate on debt = 7.00%
 - After-tax cost of debt = $7\% (1-.4) = 4.2\%$
- For InfoSoft, we will use the interest coverage ratio estimated using the operating income and interest expenses from the most recent year:
 - Interest coverage ratio = $\text{EBIT} / \text{Interest expenses} = 2000/315 = 6.35$
 - Rating based upon interest coverage ratio = A+
 - Interest rate on debt = $6\% + 0.80\% = 6.80\%$
 - After-tax cost of debt = $6.80\% (1-.35) = 4.42\%$

Estimating the Cost of Capital

- Basic problem: The debt ratios for private firms are stated in book value terms, rather than market value. Furthermore, the debt ratio for a private firm that plans to go public might change as a consequence of that action.
- Solution 1: Assume that the private firm will move towards the industry average debt ratio.
$$\text{Debt Ratio for Private firm} = \text{Industry Average Debt Ratio}$$
- Solution 2: Assume that the private firm will move towards its optimal debt ratio.
$$\text{Debt Ratio for Private firm} = \text{Optimal Debt Ratio}$$
- **Consistency in assumptions: The debt ratio assumptions used to calculate the beta, the debt rating and the cost of capital weights should be consistent.**

Estimating Costs of Capital

	<i>New York Yankees</i>	<i>InfoSoft Corporation</i>
Cost of Equity	14.28%(total beta)	11.16%(market beta)
E/ (D+E)	80.00%	93.38%
Cost of Debt	7.00%	6.80%
AT Cost of Debt	4.20%	4.42%
D/(D+E)	20.00%	6.62%
Cost of Capital	12.26%	10.71%

Estimating Cash Flows for a Private Firm

- **Shorter history:** Private firms often have been around for much shorter time periods than most publicly traded firms. There is therefore less historical information available on them.
- **Different Accounting Standards:** The accounting statements for private firms are often based upon different accounting standards than public firms, which operate under much tighter constraints on what to report and when to report.
- **Intermingling of personal and business expenses:** In the case of private firms, some personal expenses may be reported as business expenses.
- **Separating “Salaries” from “Dividends”:** It is difficult to tell where salaries end and dividends begin in a private firm, since they both end up with the owner.

Estimating Private Firm Cash Flows

- Restate earnings, if necessary, using consistent accounting standards.
 - To get a measure of what is reasonable, look at profit margins of comparable publicly traded firms in the same business
- If any of the expenses are personal, estimate the income without these expenses.
- Estimate a “reasonable” salary based upon the services the owner provides the firm.

The Yankee's Revenues

	<i>Pittsburg Pirates</i>	<i>Baltimore Orioles</i>	<i>New York Yankees</i>
Net Home Game Receipts	\$ 22,674,597	\$ 47,353,792	\$ 52,000,000
Road Receipts	\$ 1,613,172	\$ 7,746,030	\$ 9,000,000
Concessions & Parking	\$ 3,755,965	\$ 22,725,449	\$ 25,500,000
National TV Revenues	\$ 15,000,000	\$ 15,000,000	\$ 15,000,000
Local TV Revenues	\$ 11,000,000	\$ 18,183,000	\$ 90,000,000
National Licensing	\$ 4,162,747	\$ 3,050,949	\$ 6,000,000
Stadium Advertising	\$ 100,000	\$ 4,391,383	\$ 5,500,000
Other Revenues	\$ 1,000,000	\$ 9,200,000	\$ 6,000,000
Total Revenues	\$ 59,306,481	\$ 127,650,602	\$ 209,000,000

The Yankee's Expenses

	<i>Pittsburg Pirates</i>	<i>Baltimore Orioles</i>	<i>New York Yankees</i>
Player Salaries	\$ 33,155,366	\$ 62,771,482	\$ 91,000,000
Team Operating Expenses	\$ 6,239,025	\$ 6,803,907	\$ 7,853,000
Player Development	\$ 8,136,551	\$ 12,768,399	\$ 15,000,000
Stadium & Game Operations	\$ 5,270,986	\$ 4,869,790	\$ 7,800,000
Other Player Costs	\$ 2,551,000	\$ 6,895,751	\$ 7,500,000
G & A Costs	\$ 6,167,617	\$ 9,321,151	\$ 11,000,000
Broadcasting	\$ 1,250,000	\$ -	\$ -
Rent & Amortization	\$ -	\$ 6,252,151	\$ -
Total Operating Expenses	\$ 62,770,545	\$ 109,682,631	\$ 140,153,000

Adjustments to Operating Income

	<i>Pittsburg Pirates</i>	<i>Baltimore Orioles</i>	<i>New York Yankees</i>
Total Revenues	\$59,306,481	\$127,650,602	\$209,000,000
Total Operating Expenses	\$62,770,545	\$109,682,631	\$140,153,000
EBIT	-\$3,464,064	\$17,967,971	\$68,847,000
Adjustments	\$1,500,000	\$2,200,000	\$4,500,000
Adjusted EBIT	-\$1,964,064	\$20,167,971	\$73,347,000
Taxes (at 40%)	-\$785,626	\$8,067,189	\$29,338,800
EBIT (1-tax rate)	-\$1,178,439	\$12,100,783	\$44,008,200

InfoSoft's Operating Income

Stated Operating Income

Sales & Other Operating Revenues	\$20,000.00
- Operating Costs & Expenses	\$13,000.00
- Depreciation	\$1,000.00
- Research and Development Expenses	\$4,000.00
Operating Income	\$2,000.00

Adjusted Operating Income

Operating Income	\$ 2000.00
+ R& D Expenses	\$ 4000.00
- Amortization of Research Asset	\$ 2311.00
Adjusted Operating Income	\$ 3689.00

Estimating Cash Flows for Yankees

- We will assume a 3% growth rate in perpetuity for operating income. To generate this growth, we will assume that the Yankee's will earn 20% on their new investments. This yields a reinvestment rate of
- Reinvestment rate = $g / \text{ROC} = 3\% / 20\% = 15\%$
- Estimated Free Cash Flow to Firm

EBIT (1- tax rate) =	\$	44,008,200
- Reinvestment =	\$	6,601,230
FCFF	\$	37,406,970

From Cash Flows to Value

- Once you have estimated the cash flows and the cost of capital, you can value a private firm using conventional methods.
- If you are valuing a firm for sale to a private business,
 - Use the total beta and the cost of equity emerging from that to estimate the cost of capital.
 - Discount the cash flows using this cost of capital
- If you are valuing a firm for an initial public offering, stay with the market beta and cost of capital.

Valuing the Yankees

FCFF = \$ 37,406,970

Cost of capital = 12.26%

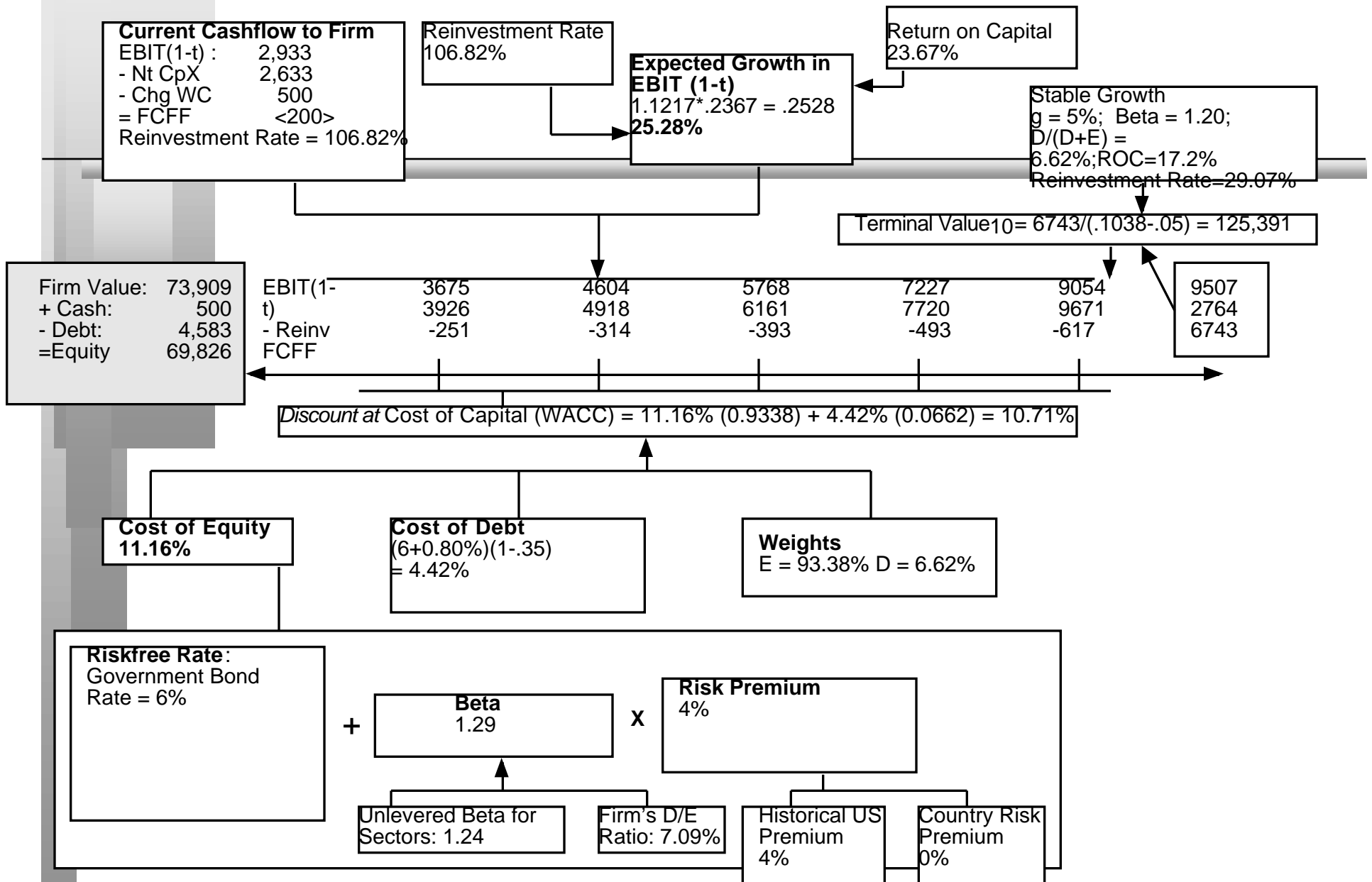
Expected Growth rate= 3.00%

Value of Yankees = \$ 37,406,970 (1.03)/(.1226-.03)
= \$ 415,902,192

What if?

- We are assuming that the Yankees have to reinvest to generate growth. If they can get the city to pick up the tab, the value of the Yankees can be estimated as follows:
 - $FCFF = EBIT(1-t) - \text{Reinvestment} = \$44.008 \text{ mil} - 0 = \44.008 million
 - $\text{Value of Yankees} = 44.008 * 1.03 / (.1226 - .03) = \489 million
- If on top of this, we assume that the buyer is a publicly traded firm and we use the market beta instead of the total beta
 - $FCFF = \$44.008 \text{ million}$
 - $\text{Cost of capital} = 8.95\%$
 - $\text{Value of Yankees} = 44.008 (1.03) / (.0895 - .03) = \761.6 million

InfoSoft: A Valuation



Valuation Motives and the Next Step in Private Company Valuation

- If valuing a private business for sale (in whole or part) to another individual (to stay private), it is necessary that we estimate
 - a illiquidity discount associated with the fact that private businesses cannot be easily bought and sold
 - a control premium (if more than 50% of the business is being sold)
- If valuing a business for taking public, it is necessary to estimate
 - the effects of creating different classes of shares in the initial public offer
 - the effects of options or warrants on the issuance price per share
- If valuing a business for sale (in whole or part) to a publicly traded firm, there should be no illiquidity discount, because stock in the parent firm will trade but there may, however, be a premium associated with the publicly traded firm being able to take better advantage of the private firm's strengths

Analyzing the Effect of Illiquidity on Value

- Investments which are less liquid should trade for less than otherwise similar investments which are more liquid.
- The size of the illiquidity discount should depend upon
 - *Type of Assets owned by the Firm*: The more liquid the assets owned by the firm, the lower should be the liquidity discount for the firm
 - *Size of the Firm*: The larger the firm, the smaller should be size of the liquidity discount.
 - *Health of the Firm*: Stock in healthier firms should sell for a smaller discount than stock in troubled firms.
 - *Cash Flow Generating Capacity*: Securities in firms which are generating large amounts of cash from operations should sell for a smaller discounts than securities in firms which do not generate large cash flows.
 - *Size of the Block*: The liquidity discount should increase with the size of the portion of the firm being sold.

Illiquidity Discounts and Type of Business

- Rank the following assets (or private businesses) in terms of the liquidity discount you would apply to your valuation (from biggest discount to smallest)
 - ❑ A New York City Cab Medallion
 - ❑ A small privately owned five-and-dime store in your town
 - ❑ A large privately owned conglomerate, with significant cash balances and real estate holdings.
 - ❑ A large privately owned ski resort that is losing money

Empirical Evidence on Illiquidity Discounts: Restricted Stock

- Restricted securities are securities issued by a company, but not registered with the SEC, that can be sold through private placements to investors, but cannot be resold in the open market for a two-year holding period, and limited amounts can be sold after that. Restricted securities trade at significant discounts on publicly traded shares in the same company.
 - Maher examined restricted stock purchases made by four mutual funds in the period 1969-73 and concluded that they traded an average discount of 35.43% on publicly traded stock in the same companies.
 - Moroney reported a mean discount of 35% for acquisitions of 146 restricted stock issues by 10 investment companies, using data from 1970.
 - In a recent study of this phenomenon, Silber finds that the median discount for restricted stock is 33.75%.

Cross Sectional Differences : Restricted Stock

- Silber (1991) develops the following relationship between the size of the discount and the characteristics of the firm issuing the registered stock –

$$\text{LN(RPRS)} = 4.33 + 0.036 \text{ LN(REV)} - 0.142 \text{ LN(RBRT)} + 0.174 \text{ DERN} + 0.332 \text{ DCUST}$$

where,

RPRS = Relative price of restricted stock (to publicly traded stock)

REV = Revenues of the private firm (in millions of dollars)

RBRT = Restricted Block relative to Total Common Stock in %

DERN = 1 if earnings are positive; 0 if earnings are negative;

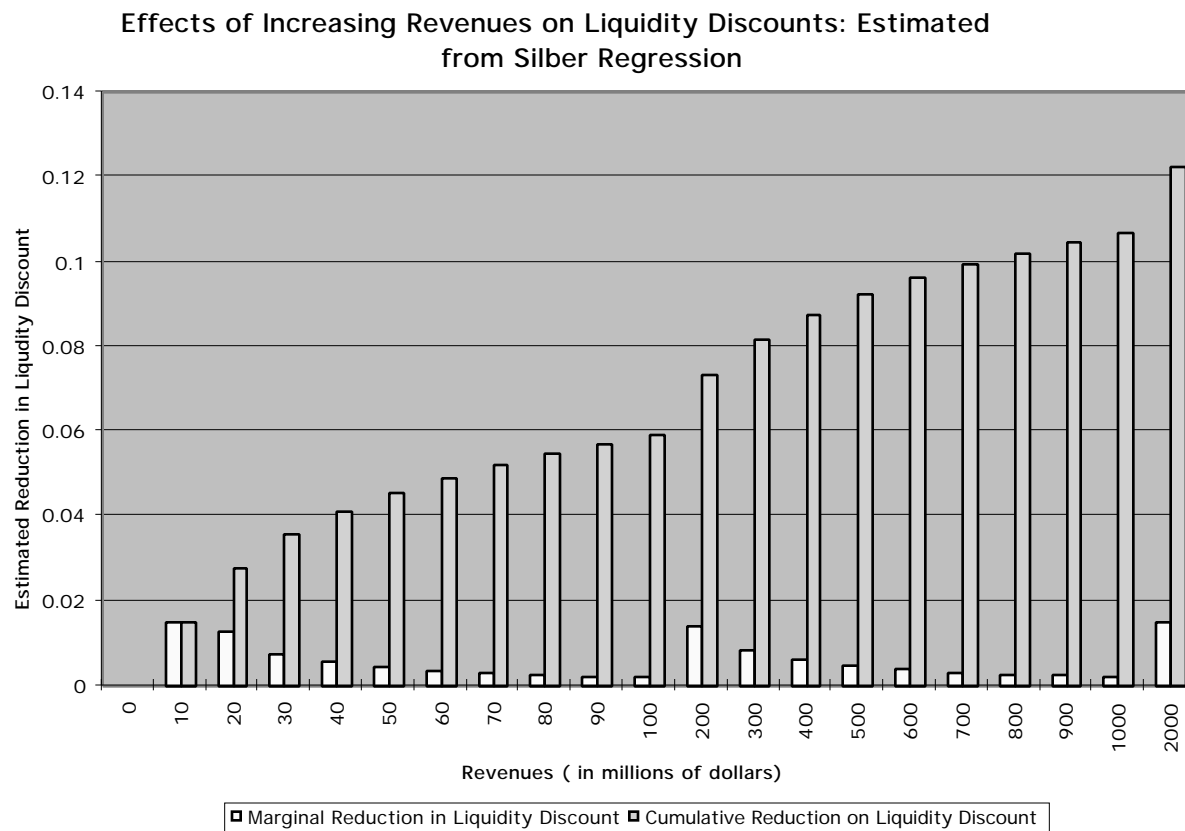
DCUST = 1 if there is a customer relationship with the investor; 0 otherwise;

- Interestingly, Silber finds no effect of introducing a control dummy - set equal to one if there is board representation for the investor and zero otherwise.

Using the Study Results to Estimate Illiquidity Discounts

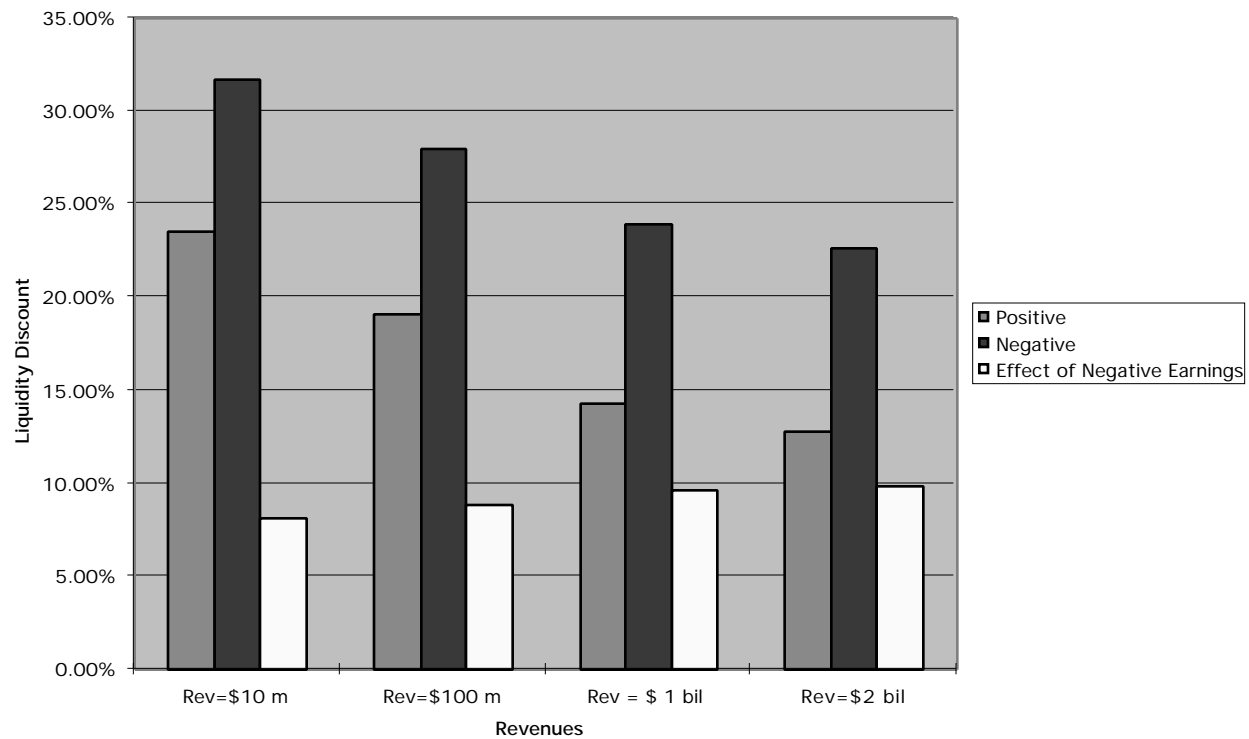
- Approach 1: Use the average liquidity discount, based upon past studies, of 20% for private firms. Adjust subjectively for size - make the discount smaller for larger firms.
- Approach 2: Estimate the discount as a function of the determinants - the size of the firm, the stability of cash flows, the type of assets and cash flow generating capacity. Plug in the values for your company into the regression to estimate the liquidity discount.

Liquidity Discount and Revenues



Losing or Making Money?

Effects of Negative Earnings



Estimating the Illiquidity Discount for the Yankees

- REV : Revenues in 2000 = \$ 207 million
- Liquidity Discount for small firm - with negligible revenues = 20%
- Liquidity Discount for the New York Yankees = 20% - 7.5% = 12.5%
 - [The 7.5% comes from the graph above, as the reduction in liquidity discount as a function of the revenues]
- Estimated value for the Yankees in a private transaction = \$416 million (1 - 0.125) = \$ 364 million

The Effects of Control

- This analysis assumes that the entire organization is up for sale. Assume now that you are buying out one of the limited partners in the Yankees, who owns 10% of the organization. Would you be willing to pay to pay 10% of the estimated value?
 - Yes
 - No
- If not, would you pay less or more than this amount?
 - Less
 - More
- Why?

An Alternate Approach to the Illiquidity Discount: Bid Ask Spread

- The bid ask spread is the difference between the price at which you can buy a security and the price at which you can sell it, at the same point.
- In other words, it is the illiquidity discount on a publicly traded stock.
- Studies have tied the bid-ask spread to
 - the size of the firm
 - the trading volume on the stock
 - the degree
- Regressing the bid-ask spread against variables that can be measured for a private firm (such as revenues, cash flow generating capacity, type of assets, variance in operating income) and are also available for publicly traded firms offers promise.

Valuing Initial Public Offerings

■ Discounted Cash Flow Approach

- Value the firm and the equity in the firm using traditional discounted cash flow models.
- From the value of the equity, subtract out the value of any non-common stock equity claims on the firm (such as warrants and options)
- Divide the value of the equity by the total number of shares outstanding, including the shares that are retained by the existing owners of the firm

■ Relative Valuation Approach

- Choose a group of comparable firms
- Choose a multiple (preferably one that is widely used in the sector)
- Estimate a multiple for this firm based upon its characteristics, relative to the comparable firms

Voting and Non-Voting Shares

- If one class of shares have no voting rights while the other class of shares do, the difference in voting rights, other things being equal, should make the latter more valuable.
- The difference in value should be a function of the value of controlling the firm.

A General Framework for Valuing Control

- The value of the control premium that will be paid to acquire a block of equity will depend upon two factors -
 - **Probability that control of firm will change:** This refers to the probability that incumbent management will be replaced. this can be either through acquisition or through existing stockholders exercising their muscle.
 - **Value of Gaining Control of the Company:** The value of gaining control of a company arises from two sources - the increase in value that can be wrought by changes in the way the company is managed and run, and the side benefits and perquisites of being in control

Value of Gaining Control = Present Value (Value of Company with change in control - Value of company without change in control) + Side Benefits of Control

Determinants of Probability of Control Changing

- **Legal Restrictions on Takeovers:** The greater the legal restrictions on takeovers the smaller the probability of control changing.
- **Anti-takeover and Pro-incumbent restrictions in corporate charter:** The greater the restrictions on takeovers and on changes in incumbent management the lower the probability of control changing.
- **Market Attitudes towards Control Changes:** The probability of control changing will be much greater if markets accept and welcome challenges to incumbent management's authority.
- **Size of stock holding controlled by incumbent management:** The greater the proportion, the lower the probability of control changing.
- **Diffusion of Holdings:** One might be able to exert control with less than 51%, if shares are widely held.
- **Relative numbers of voting and non-voting shares:** The greater the number of voting shares, relative to non-voting shares, the smaller is the control premium per share.

Determinants of Value of Control Changing

- **Quality of Incumbent Management:** To the degree that the company is well managed and well run under the incumbent management, there is no increase in value that flows from gaining control of the company. A badly managed company might provide much more opportunity for value creation from changes in management and financial policy.
- **Ease with which changes in management can be made:** Acquiring control is not the same thing as exercising control. The easier it is to exercise control, the greater will be the value to the control. The difficulty of exercising control will generally increase with the size of the firm and with the number of lines of business it is in. It is much easier to go into a small firm with one line of business and change the way it is run, than it is to do the same with a larger and more diversified organization. While control may still be exercised eventually, the present value of the increased control will be much smaller .

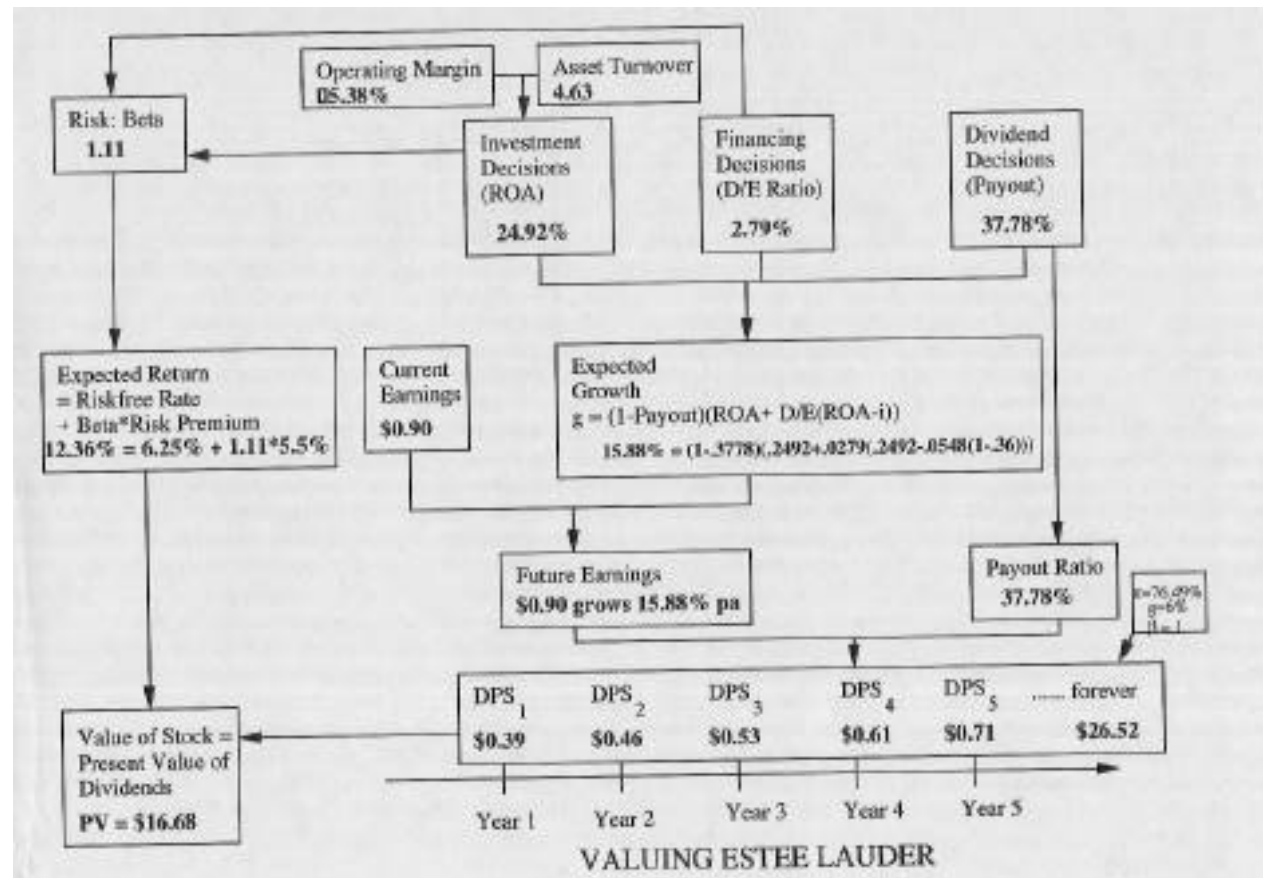
Empirical Studies on Voting versus Non-Voting Shares

- Studies that compare the prices of traded voting shares against the prices of traded non-voting shares, to examine the value of the voting rights conclude that while the **voting shares generally trade at a premium over the non-voting shares, the premium is small.**
 - Lease, McConnell and Mikkelsen (1983) find an average premium of only 5.44% for the voting shares. (There are similar findings in DeAngelo and DeAngelo (1985) and Megginson (1990))
 - These studies have been critiqued for underestimating the value of control, because the probability of gaining control by acquiring these voting shares is considered low for two reasons - first, a substantial block of the voting shares is often still held by one or two individuals in many of these cases, and second, the prices used in these studies are based upon small block trades, which are unlikely to give the buyer majority control.

A Test: Reader's Digest

- Reader's Digest has two classes of shares outstanding - voting and non-voting. These are the additional facts:
 - The company has seen its stock price drop substantially over the last 3 years, and analysts believe that the company's valuable brand name is not being used well by incumbent management
 - Of the outstanding voting shares, 71% is held by two charitable institutions, which are controlled by the current CEO of the firm.
- Would you expect the voting shares to trade at a significant premium over the non-voting shares?
 - Yes
 - No

Valuing Estee Lauder



Estee Lauder: Comparables

<i>Company</i>	<i>Beta</i>	<i>Price</i>	<i># Shares</i>	<i>EPS</i>	<i>BV /share</i>	<i>Sales/share</i>	<i>ROE</i>	<i>Net Margin</i>	<i>Payout</i>	<i>Exp. Growth</i>
Alberto Culver	0.85	30	27.8	2.1	15.1	54.85	14.00%	3.80%	17%	11%
Avon Products	1.3	72	65	4.75	3.55	76.9	136.96%	6.30%	48%	12.50%
BIC Corporation	0.65	40	23.56	2.7	13.8	23.75	19.50%	11.50%	38%	10.50%
Carter-Wallace	1.2	12	46.2	0.8	8.25	14.95	10.50%	5.50%	22%	7.50%
Gillette	1.25	49	444	2.15	7.15	16.85	29.00%	12.80%	33%	17%
Helen of Troy	0.95	18	6.45	2.25	17.8	28.5	13.00%	8.20%	0	13%
Helene Curtis	0.85	30	9.9	2.3	25.85	138.9	8.50%	1.60%	14%	8.50%
Tambrands	1.05	44	36.65	2.75	3.55	19.6	76.92%	13.90%	69%	15.00%
Jean Philippe Fragrances	1.9	11	10.24	0.7	4.35	7.33	16.30%	9.70%	0	20%
Estee Lauder	1.11	?	114.6	0.9	\$ 3.13	\$ 25.30	28.74%	3.56%	37.78%	25%

Estee Lauder: PE ratio comparison

<i>Company</i>	<i>Beta</i>	<i>Price</i>	<i># Shares</i>	<i>EPS</i>	<i>PE Ratio</i>	<i>Exp Growth</i>	<i>Payout Ratio</i>	<i>Beta</i>
Alberto Culver	0.85	30	27.8	2.1	14.29	11%	17%	0.85
Avon Products	1.3	72	65	4.75	15.16	12.50%	48%	1.3
BIC Corporation	0.65	40	23.56	2.7	14.81	10.50%	38%	0.65
Carter-Wallace	1.2	12	46.2	0.8	15.00	7.50%	22%	1.2
Gillette	1.25	49	444	2.15	22.79	17%	33%	1.25
Helen of Troy	0.95	18	6.45	2.25	8.00	13%	0	0.95
Helene Curtis	0.85	30	9.9	2.3	13.04	8.50%	14%	0.85
Tambrands	1.05	44	36.65	2.75	16.00	15.00%	69%	1.05
Jean Philippe Frangrances	1.9	11	10.24	0.7	15.71	20%	0	1.9
AVERAGE	1.11				14.98	12.78%	26.78%	1.11
Estee Lauder	1.11	?	114.6	0.9	?	25%	37.78%	1.11

Estee Lauder: PE Ratio Analysis

- **Simple Approach:** The average PE/growth rate for the sector is 1.17, obtained by dividing the average PE ratio by the average growth rate. Applying this PEG ratio to Estee Lauder, we get:

$$\text{Estimated PE ratio} = 1.17 * 25 = 29.31$$

$$\text{Estimated Price per share} = 29.31 * 0.90 = \$ \mathbf{26.38}$$

- Assumes firms are of equivalent risk and have similar cash flow patterns.
- It also assumes that growth and PE are linearly related

- **Regression Approach:** A regression of PE against growth, payout and risk yields the following:

$$\text{PE} = 10.17 + 37.62 g \qquad R^2 = 15.86\%$$

Estee Lauder's Predicted PE ratio (based upon regression)

$$= 10.17 + 37.62(.25) = 19.58$$

$$\text{Estee Lauder's Predicted Price} = 19.58 * 0.90 = \$ \mathbf{17.62}$$

Estee Lauder: PBV ratios of Comparable Firms

<i>Company</i>	<i>Beta</i>	<i>Price</i>	<i># Shares</i>	<i>BV /share</i>	<i>PBV Ratio</i>	<i>Exp Growth</i>	<i>Payout Ratio</i>	<i>Beta</i>	<i>ROE</i>
Alberto Culver	0.85	30	27.8	15.1	1.99	11%	17%	0.85	14.00%
Avon Products	1.3	72	65	3.55	20.28	12.50%	48%	1.3	136.96%
BIC Corporation	0.65	40	23.56	13.8	2.90	10.50%	38%	0.65	19.50%
Carter-Wallace	1.2	12	46.2	8.25	1.45	7.50%	22%	1.2	10.50%
Gillette	1.25	49	444	7.15	6.85	17%	33%	1.25	29.00%
Helen of Troy	0.95	18	6.45	17.8	1.01	13%	0	0.95	13.00%
Helene Curtis	0.85	30	9.9	25.85	1.16	8.50%	14%	0.85	8.50%
Tambrands	1.05	44	36.65	3.55	12.39	15.00%	69%	1.05	76.92%
Jean Philippe Fragrances	1.9	11	10.24	4.35	2.53	20%	0	1.9	16.30%
AVERAGE	1.11				5.62	12.78%	26.78%	1.11	36.08%
Estee Lauder	1.11	?	114.6	3.13	?	25%	37.78%	1.11	28.74%

Estee Lauder: Analyzing PBV Ratio

- **Simple Analysis:** Estee Lauder has a lower return on equity than the average for the sector. If we assume that the relationship is linear, the estimated price/book value ratio for Estee Lauder is:

$$\text{Estimated PBV ratio} = 5.62 * (28.74\% / 36.08\%) = 4.48$$

$$\text{Estimated Price} = \$ 3.13 * 4.48 = \mathbf{\$14.01}$$

- **Regression Approach:** A regression of PBV against ROE yields:

$$\text{PBV} = 0.16 + 15.13 \text{ ROE} \quad R^2 = 97.53\%$$

Estee Lauder's Predicted PBV ratio (based upon regression)

$$= 0.16 + 15.13 (.2874) = 4.51$$

$$\text{Estee Lauder's Predicted Price} = \$3.13 * 4.51 = \mathbf{\$ 14.10}$$

Estee Lauder: PS Ratios of Comparable Firms

<i>Company</i>	<i>Beta</i>	<i>Price</i>	<i># Shares</i>	<i>Sales/share</i>	<i>PS Ratio</i>	<i>Exp Growth</i>	<i>Payout Ratio</i>	<i>Beta</i>	<i>Margin</i>
Alberto Culver	0.85	30	27.8	54.85	0.55	11%	17%	0.85	3.80%
Avon Products	1.3	72	65	76.9	0.94	12.50%	48%	1.3	6.30%
BIC Corporation	0.65	40	23.56	23.75	1.68	10.50%	38%	0.65	11.50%
Carter-Wallace	1.2	12	46.2	14.95	0.80	7.50%	22%	1.2	5.50%
Gillette	1.25	49	444	16.85	2.91	17%	33%	1.25	12.80%
Helen of Troy	0.95	18	6.45	28.5	0.63	13%	0	0.95	8.20%
Helene Curtis	0.85	30	9.9	138.9	0.22	8.50%	14%	0.85	1.60%
Tambrands	1.05	44	36.65	19.6	2.24	15.00%	69%	1.05	13.90%
Jean Philippe Fragrances	1.9	11	10.24	7.33	1.50	20%	0	1.9	9.70%
AVERAGE	1.11				1.27	12.78%	26.78%	1.11	8.14%
Estee Lauder	1.11	?	114.6	25.3	?	25%	37.78%	1.11	3.56%

Estee Lauder: Analyzing PS Ratio

- **Simple Analysis:** Estee Lauder has a lower margin than the average for the sector. If we assume that the relationship is linear, the estimated price/sales value ratio for Estee Lauder is:

$$\text{Estimated PS ratio} = 1.27 * (3.56\% / 8.14\%) = 0.56$$

$$\text{Estimated Price} = \$ 25.30 * 0.56 = \$ \mathbf{14.10}$$

- **Regression Approach:** A regression of PBV against ROE yields:

$$\text{PS} = -0.28 + 19.09 \text{ Margin} \quad R^2 = 82.27\%$$

Estee Lauder's Predicted PS ratio (based upon regression)

$$= -0.28 + 19.09 (.0356) = 0.40$$

$$\text{Estee Lauder's Predicted Price} = \$ 25.30 * 0.40 = \$ \mathbf{10.12}$$

Estee Lauder: Summing up the Estimates

Approach	Value
Discounted Cashflow Models	
Dividend Discount Model	\$ 16.68
FCFE Discount Model	\$ 17.63
Relative Valuation Models	
PEG Ratio: Simple	\$26.31
PE ratio: Regression	\$17.62
PBV Ratio: Simple	\$ 14.01
PBV Ratio: Regression	\$ 14.10
PS Ratio: Simple	\$ 14.10
PS Ratio: Regression	\$ 10.12

What would you do?

- If you were one of the investment bankers taking the company public, which of the valuation approaches would you use and why? What price would you put on the IPO?
- If you were a long term investor interested in Estee Lauder, what price would you be willing to pay for the stock?