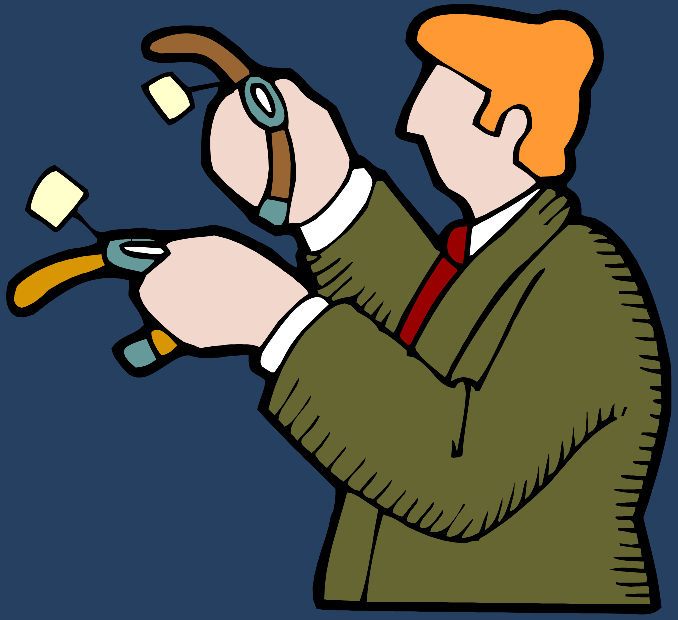
Business Analysis and Valuation

Relative Valuation



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Agenda

- *Overview of relative valuation*
- *Implicit assumptions in relative valuation*
- *P/E and other multiples*
- *P/E special cases*
- *Multiples and values*
- *Market vs Transaction multiples*
- *Customer Life-cycle Valuation*
- *Pros & Cons of relative valuation*

The Building Blocks of Valuation

Choose a			
Cash Flow	*Dividends* Expected Dividends to Stockholders	*Cashflows to Equity* Net Income - (1- δ) (Capital Exp. - Deprec'n) - (1- δ) Change in Work. Capital = Free Cash flow to Equity (FCFE) [δ = Debt Ratio]	*Cashflows to Firm* EBIT (1- tax rate) - (Capital Exp. - Deprec'n) - Change in Work. Capital = Free Cash flow to Firm (FCFF)
& A Discount Rate	*Cost of Equity* • *Basis*: The riskier the investment, the greater is the cost of equity. • *Models:* CAPM: Riskfree Rate + Beta (Risk Premium) APM: Riskfree Rate + Σ $Beta_j$ (Risk $Premium_j$): *n factors*		*Cost of Capital* WACC = k_e (E/ (D+E)) + k_d (D/(D+E)) k_d = Current Borrowing Rate (1-t) E,D: Mkt Val of Equity and Debt

Overview of valuation tecniques

- *Book Value*
  - Depreciated value of assets minus outstanding liabilities
- *Liquidation Value*
  - Amount that would be raised if all assets were sold independently
- *Intrinsic Equity Value (E)*
  - NPV of future cash flows to equity (discounted at shareholders' required rate of return)
- *Intrinsic Enterprise Value (V)*
  - NPV of future unlevered cash flows (discounted at the weighted average cost of capital (WACC)
- *Market Value (P) or Relative Valuation*
  - Value according to market price of outstanding stock or to the market price of comparable companies

Overview of Relative Valuation

- ***What is it?***: *The value of any asset can be estimated by looking at how the market prices "similar" or 'comparable" assets.*
- ***Philosophical Basis***: *The intrinsic value of an asset is impossible (or close to impossible) to estimate. The value of an asset is whatever the market is willing to pay for it (based upon its characteristics)*

Overview of Relative Valuation

In relative valuation, the value of an asset is derived from the pricing of 'comparable' assets, standardized using a common variable such as earnings, cashflows, book value or revenues.

The underlying rationale is to c*ompare market price (stock price) to a benchmark of fundamental value .*

RELATIVE VALUATION	DCF VALUATION
Markets make mistakes on individual investments, but they are right, on average, in how they price an industry or a market segment.	Markets make mistakes over time.

Overview of Relative Valuation

- ***Use of Multiples:***

– Is stock price too high/low? …relative to a measure of future cash flows? Quick check for dcf results

- *Method is simple to implement:*

– No detailed multi-year forecasts necessary.

Steps:

1) Select financial performance measure (ie sales, cash flow, earnings, book value of equity, etc).

2) Estimate price multiples for comparable firms using the measure of performance. Take average/median/other.

3) Apply comparable firm(s) multiple to the performance measure of the firm being analyzed.

Implicit assumptions of multiples analysis

– *Rely on the stock market to evaluate the prospects of profitability and growth of comparable/competitor firms.*

– *Assume that the same prospects apply to comparable firms .*

How to identify comparables?	
-Listed companies -Peer-samples -Industry studies	- Size - Industry - Competitive position - Growth/Profitability - Leverage/Risk

P/E Multiples

The perpetuity and growing perpetuity formulae gave us direct insights into P/E multiples:

P/E = 1/r or P/E = 1/(r-g)

For multiples comparisons, we assume:

- *Risk ("r") is the same for firms (Therefore, industry, leverage are important.*
- *Higher risk implies lower P/E*
- *Growth is the same for comparable firms*
- *Starting point is important (stage in life cycle)*
- *Higher growth implies higher P/E*

Other types of price-based ratios

Two generic categories

Using levered (after interest) cash flows in denominator:

– Standard P/E = price (per share) of common / EPS

– P/CF= price of common stock / CFO (usually before changes in WC)

Using unlevered cash flows in denominator:

[Debt + Equity] / EBIT (1-t) [NOPAT]

[Debt + Equity] / EBIT

[Debt + Equity] / EBITDA

[Debt + Equity] / Sales

Enterprise Value (EV)/EBITDA

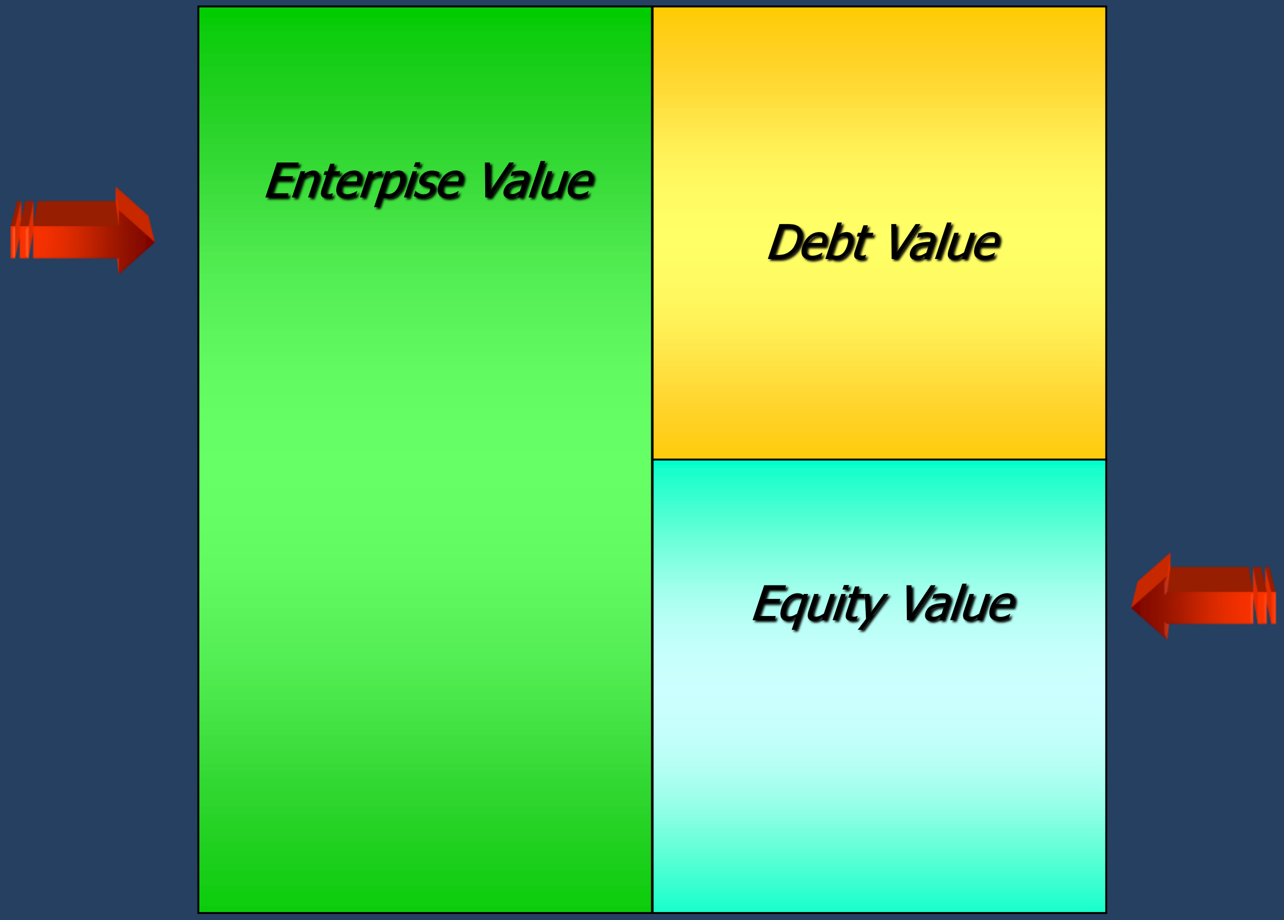
Relative Valuation

Equity value	Enterprise value
P/E: Price/Earning Ratio	*EV/EBIT*
P/BV: Price/Book Value	*EV/EBITDA*
P/CE: Price/Cash Earning	*EV/Sales*
	EV/ Non financial performance (or asset)

Relative Valuation

Multiples and Values

- EV/EBIT
- EV/EBITDA
- EV/SALES



- P/E
- P/CE
- P/BV

Market vs Transaction Prices

- Frequency of sales also of the same asset
- Official prices
- Standard contracts
- Special conditions for each situation
- Control premium

Special cases

P/E Multiples

- ***What if today's earnings are not a good measure of future earnings (cashflows)?***
  - Current price is \$14.80 (Yesterday's price)
  - Earnings for last 12 months is \$0.05
  - Trailing (or current) P/E = 296
  - Industry P/E is 28
  - Is company overvalued?
  - But predicted earnings for 2004 year is \$0.27/share
  - Therefore, forward P/E = 55 (less overvalued?)
- ***Solution 1: Use the forward P/E ratio (maybe firm has write-down today) • Example: Apple Computer***

Special cases

Solution 2: Use "pro forma" earnings … that is remove non-recurring items.

Multiples

Components of Earnings:

– Operating Income

– Special or Unusual Items (usually negative) » Either infrequent or not part of normal business

– Extraordinary Items (usually negative) » Both infrequent and not part of normal business

– Use Price to operating cash flow (does not contain "one-time accounting items")

Special cases

Solution 3: Directly model and understand implications of future earnings growth!

– The growing perpetuity is a better interpretation of P/E multiple in this case: $P/E=1/(r-g)$

– Higher expected future growth (g) means higher current P/E ratio.

– Again, higher risk ("r") still implies lower P/E

A special case: lifetime customer value

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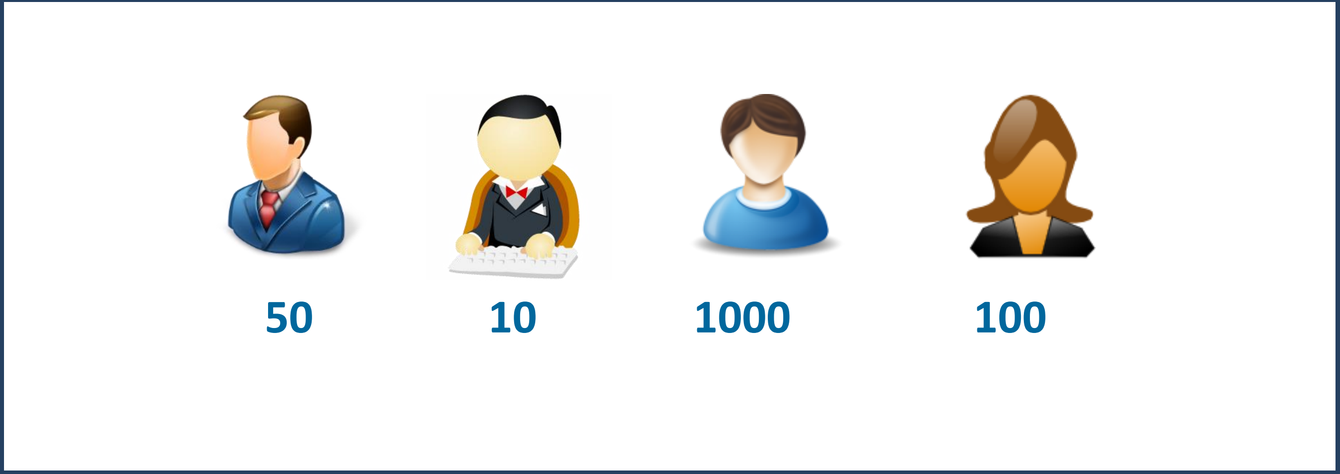
A special case: lifetime customer value

- ***Prediction of the net profit attributed to the entire future relationship with a customer*** *(wikipedia)*



- *The most **important** metric in business analytics (incl. digital)?*
- *Not widely used… (Because it is **hard to calculate**, esp. in digital)*
- *Example: using CLV to acquire customers for a mobile game*

Calculating customer lifetime value: 2 challenges

- ***We need to be able to attribute profit to a customer over his / her entire lifetime***
  - Profit across sales channels (on and offline)
  - Single customer view?
  - Web analytics packages visit rather than customer-centric

- ***We need to be able to forecast lifetime value based on past behaviour to date***
  - Need a model that matches the data (reasonably well)
  - Needs to be done *fast* if used to acquire customers
  - Limited data set
  - **Prediction is an art, not a science**

Meeting those challenges:
1. Measuring actual customer lifetime value

i. *Identify the moments in a customer journey where value is generated*

ii. *Tie records for a specific customer together into a complete journey*

   – E.g. using sales records, loyalty programmes, cookie IDs
   – If it is not possible to do at a customer level, then do at a segment level (and infer *average CLV from segment lifetime value / number of customers*)

iii. *Measure the profit made at each point*

   i. Normally use gross profit for simplicity

iv. *Sum them over the customer's "lifetime"*

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Doing this is getting easier all the time:

1. Improvements in analytics solutions e.g. *Universal Analytics*
2. Companies are getting better at getting user's to identify themselves e.g. via logins

Meeting those challenges:

2. Forecasting value based on past behaviour to date

1. *Identify the moments in a customer journey where value is generated*
2. *Examine the value created at each moment: whats it a function of?*
   – Does it vary much by customer / segment/ time / anything else? (I.e. wide variance in values)
   – If that variation is significant, what is it a function of?
3. *Examine the likelihood of moving from one moment to-the-next: what is it a function of?*
   – Does it vary much by customer / segment / time / anything else?
   – If that variation is significant, what is it a function of?

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2. Forecasting value based on past behaviour to date

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Developing a model is likely much easier for a telecoms operator (reliable subscription revenue) rather than an online clothing retailer

Implementation

CASE FOR MULTIPLES:

- *You wish to value Target (retailer):*

– Find benchmark firms: ie Walmart, JCPenny, Sears

– Assume market correctly sets competitors' stock prices.

– Assume all firms have the same risk (systematic & industry).

– Assume cashflow growth is similar for all the firms.

– Assume accounting techniques to calculate earnings (or book equity or sales or EBITDA) are similar for all the firms.

– Implication: the P/E model (perpetuity or growing perpetuity) is the same for competitors and Target Corp.

– A Multiples Valuation Approach:

Take average P/E of competitors

Multiply by Target's EPS of obtain the predicted price of Target.

Advantages of Relative Valuation

- *Relative valuation is <u>much more likely to reflect market perceptions</u> and moods than discounted cash flow valuation. This can be an advantage when it is important that the price reflect these perceptions as is the case when*
  - the objective is to sell a security at that price today (as in the case of an IPO)
  - investing on “momentum” based strategies
- *Since portfolio managers are <u>judged</u> based upon how they perform <u>on a relative basis</u> (to the market and other money managers), relative valuation is more tailored to their needs*
- *Relative valuation generally <u>requires less information</u> than discounted cash flow valuation (especially when multiples are used as screens)*

Disadvantages of Relative Valuation

- *Relative valuation is built on the assumption that markets are correct in the aggregate, but make mistakes on individual securities. To the degree that markets can be over or under valued in the aggregate, relative valuation will fail*
- *Relative valuation may require less information in the way in which most analysts and portfolio managers use it. However, this is because implicit assumptions are made about other variables (that would have been required in a discounted cash flow valuation). To the extent that these implicit assumptions are wrong the relative valuation will also be wrong.*

When relative valuation works best..

- *This approach is easiest to use when*
  - there is a <u>large number of assets comparable</u> to the one being valued
  - these <u>assets are priced</u> in a market
  - there exists <u>some common variable</u> that can be used to standardize the price
- *This approach tends to work best for investors*
  - who have relatively <u>short time horizons</u>
  - are <u>judged based upon a relative benchmark</u> (the market, other portfolio managers following the same investment style etc.)
  - can take actions that can <u>take advantage of the relative mispricing</u>; for instance, a hedge fund can buy the under valued and sell the over valued assets