VALUATION: CLOSING THOUGHTS

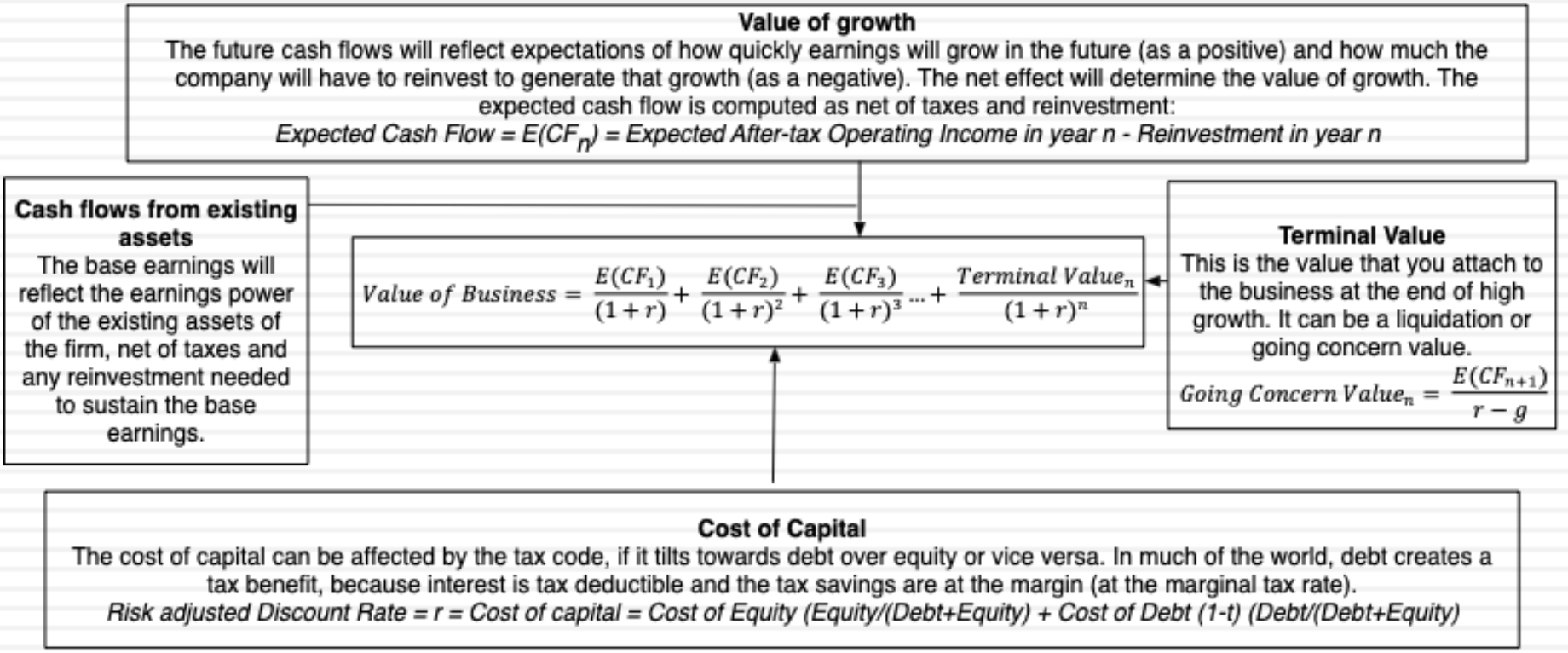
Spring 2024

"It ain't over till its over"

Back to the very beginning: Approaches to Valuation

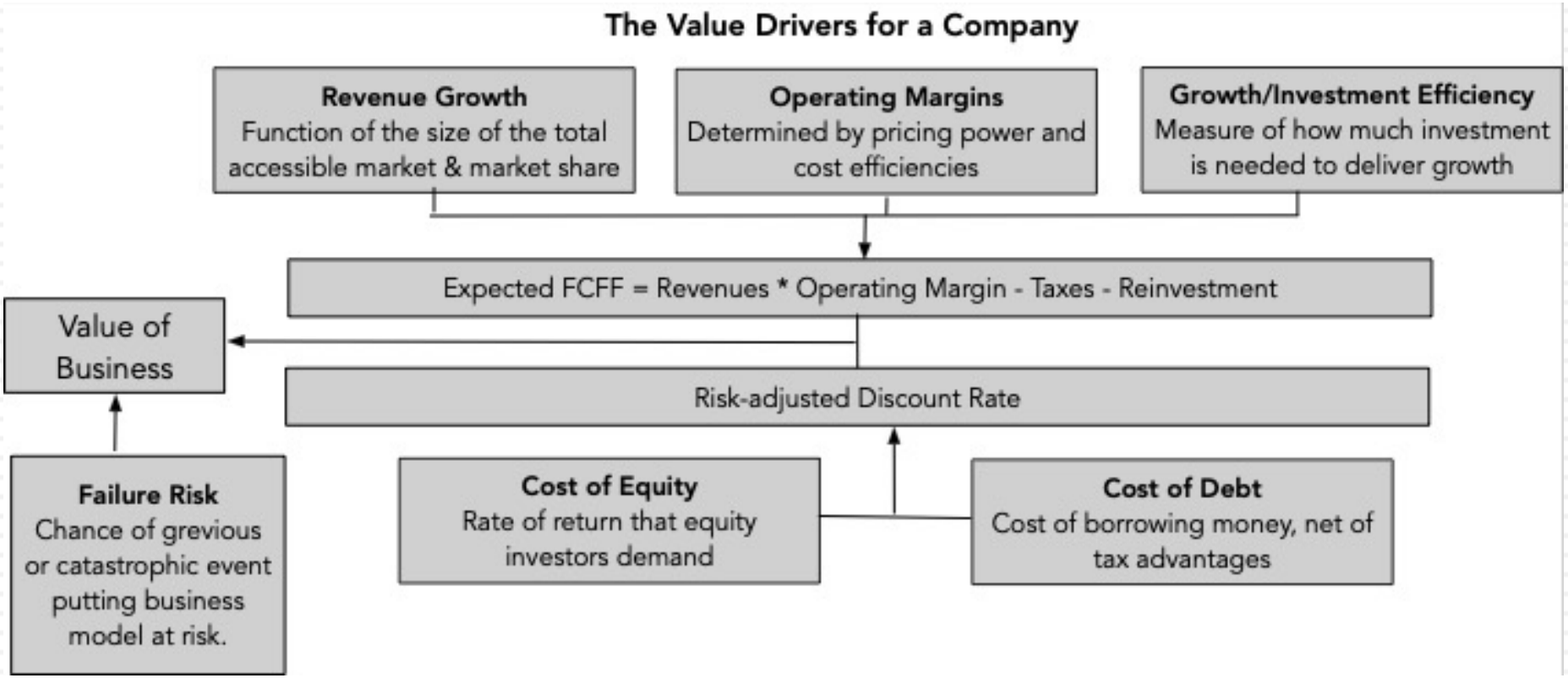
- **Discounted Cashflow Valuation**, where we try (sometimes desperately) to estimate the intrinsic value of an asset by using a mix of theory, guesswork and prayer.
- **Relative valuation**, where we pick a group of assets, attach the name "comparable" to them and tell a story.
- **Contingent claim valuation**, where we take the valuation that we did in the DCF valuation and divvy it up between the potential thieves (equity) and the victims of this crime (lenders)

Intrinsic Valuation: The set up

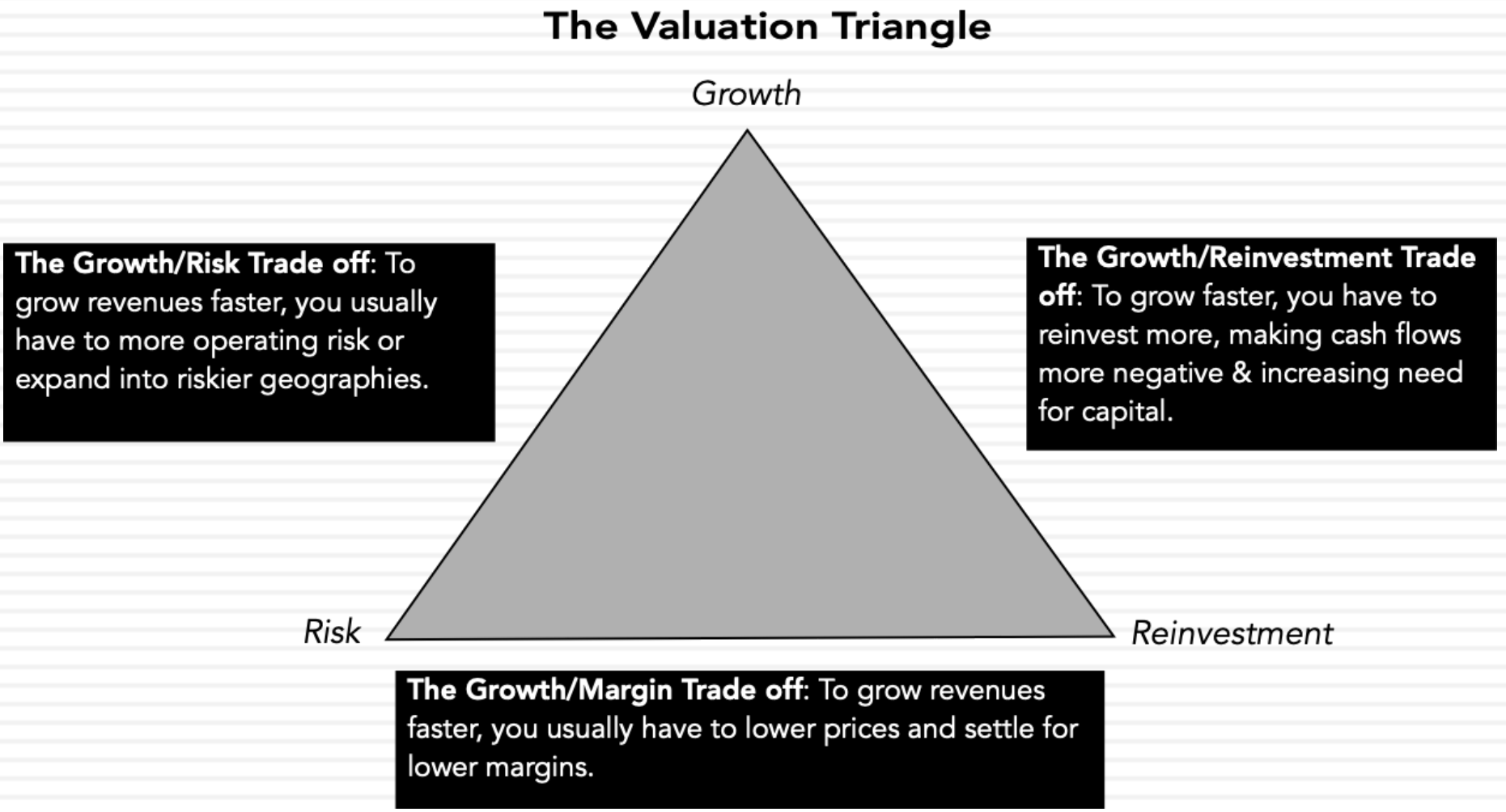


$Going\ Concern\ Val$

The Value Drivers..



The Valuation Triangle



Your intrinsic valuation findings

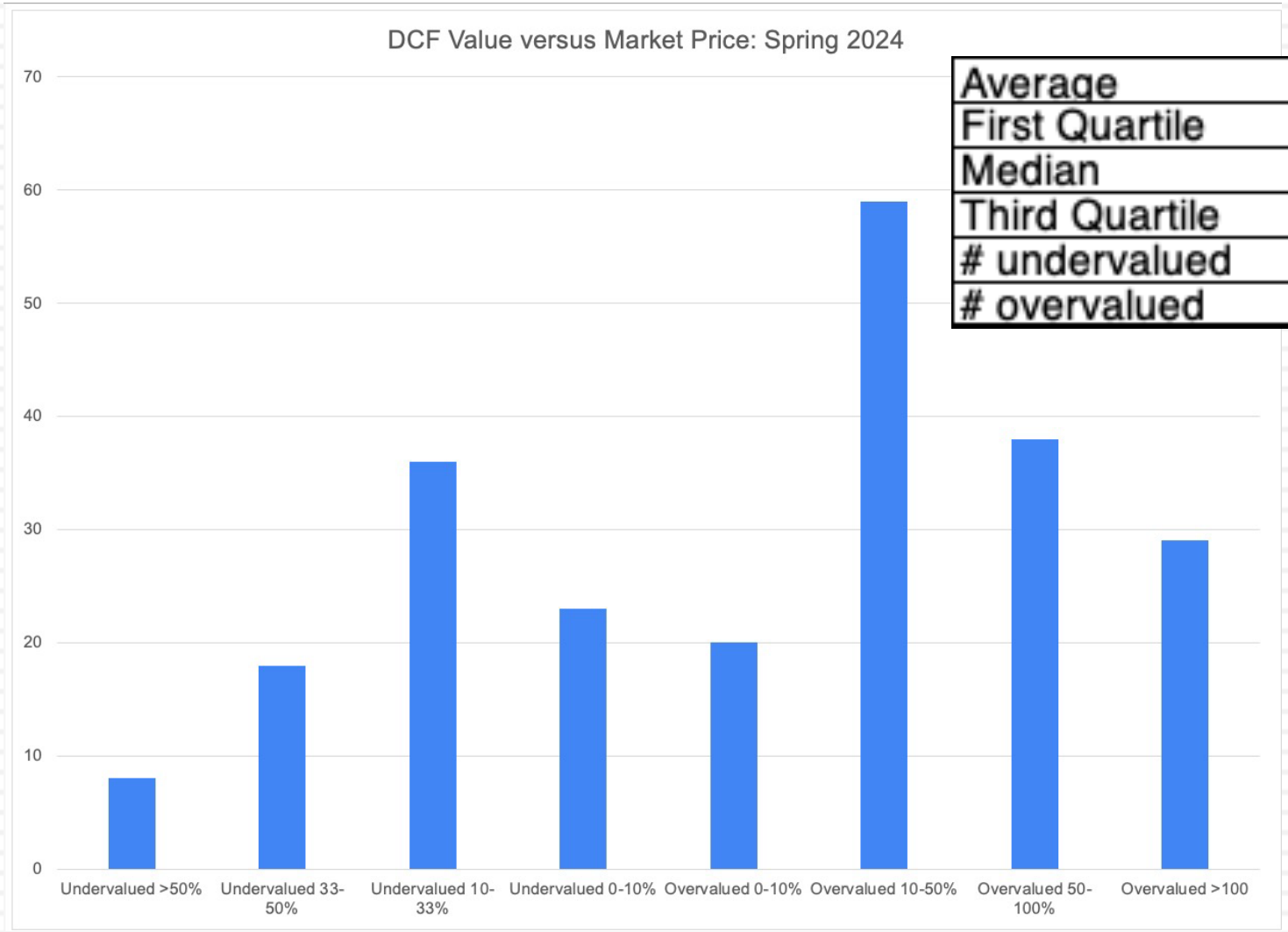
The Most Valued Company (Companies)..

Company	*Number of analyses*
Nvidia	6
Celsius, Walmart	5
BYD, Costco, Draftkings, Lululemon, Spotify, Novo Nordisk, Lyft	4
Boeing, Airbnb, Beyond Meat, Coinbase, ON Holding	3

And here is why its not a problem..

Company	*Country*	*Date*	*Prce/Share*	*DCF Value/Share*	*Multiple*	*Pricing/share*	*Recommendation*
Netflix							
Netflix	United States	5/5/24	$579.34	$700.23	EV/EBITDA	$139.36	Buy
Netflix	United States	5/6/24	$579.34	$458.30	EV/EBITDA	338.41	Sell
Netflix	United States	5/5/24	$579.34	$539.81	PBV	528.12	Sell
Netflix	United States	4/30/24	$550.64	$260.90	EV/Sales	$347.00	Sell
NVIDIA							
Nvidia	United States	5/5/24	$887.83	$530.69	EV/Sales	$660.71	Sell
Nvidia	United States	4/28/24	$877.35	$550.89	PBV	$854.79	Sell
Nvidia	United States	5/3/24	$887.89	$530.67	EV/EBITDA	$993.83	Sell
Nvidia	United States	5/3/24	$887.83	$520.12	EV/EBITDA	$834.81	Sell
Nvidia	USA	4/30/24	$864.02	$607.71	EV/EBITDA	$713.13	Sell
Nvidia	United States	5/3/24	$887.89	$422.83	EV/Sales	$496.60	Sell

What you found…



Average	35.2%
First Quartile	-11.7%
Median	14.2%
Third Quartile	57.3%
# undervalued	86
# overvalued	150

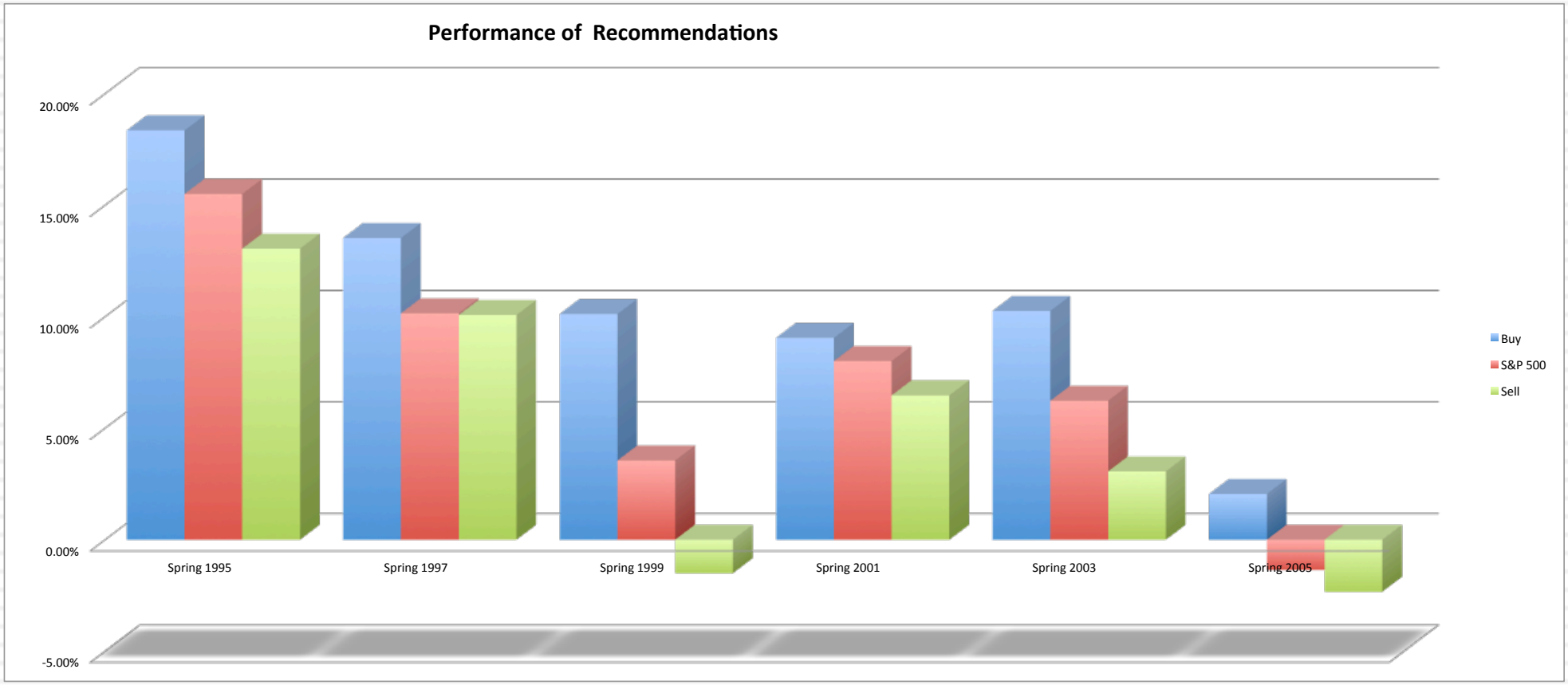
The most undervalued stocks…

Company	Country	Date	Prce/Share	DCF Value/Share	Multiple	Pricing/share	Recommendation	Price/DCF
Li Auto	USA	5/5/24	$28.00	$135.05	EV/Sales	$140.40	Buy	20.73%
Heidrick&Struggles	United States	5/5/24	$29.83	$93.25	EV/Sales	$75.93	Buy	31.99%
ON Holdings (ONON)	Switzerland	5/3/24	$33.27	$91.92	EV/EBITDA	$30.26	Buy	36.19%
Lyft	United States	5/2/24	$16.84	$44.90	P/BV	$28.15	Buy	37.51%
Employers Holdings	US	28-Apr-24	$44.01	$104.44	PBV	$60.38	Buy	42.14%
Coupang	United States	5/3/24	$23.00	$54.19	EV/Sales	$16.78	Buy	42.44%
MGM Resorts	United States	3/24/24	42.77	87.23	EV/EBITDA	$54.08	Buy	49.03%
International Workplace Group	UK	5/2/24	188	379.59	EV/EBITDA	593	Buy	49.53%
Delta Airlines	United States	5/5/24	51.55	102.88	PE	105.37	Buy	50.11%
Hims & Hers	United States	5/4/24	$11.25	$21.73	PBV	$13.76	Buy	51.77%
Viasat	United States	5/3/24	$17.21	$30.45	EV/Sales	$102.12	Buy	56.52%
BYD	China	5/3/24	218.5	377.6	EV/EBIT	160.37	Buy	57.87%
Vistry	GB	5/3/24	12.87	21.98	EV/EBITDA	9.13	Buy	58.55%
Air Arabia	UAE	5/3/24	2.66	4.43	EV/EBITDA	125.78	Buy	60.05%
Amazon	United States	5/3/24	$186.24	$304.20	EV/EBITDA	$222.12	Buy	61.22%

The Most Overvalued stocks are...

Company	Country	Date	Prce/Share	DCF Value/Share	Multiple	Pricing/share	Recommendation	Price/DCF
AMC	United States	5/5/24	$3.30	($6.61)	EV/Sales	$2.35	Buy	NA
Beyond Meat	United States	5/5/24	$8.23	$0.00	EV/Sales	$3.98	Sell	NA
Beyond Meat	United States	5/5/24	$8.23	$0.00	EV/Sales	($22.08)	Sell	NA
WeWork	United States	5/5/24	$0.15	($48.08)	EV/Sales	$98.99	Sell	NA
NextEra Energy	United States	5/5/24	$70.14	$13.19	EV/EBITDA	$132.10	Buy	531.77%
Coinbase	United States	28/4/2024	$218.16	$44.06	EV/EBITDA	$24.04	Sell	495.14%
Paramount Global	United States	5/3/24	$12.89	$2.74	EV/Sales	$61.30	Sell	470.44%
Aramco	KSA	5/3/24	$29.95	$7.61	EV/Sales	$3.16	Sell	393.56%
SweetGreen	USA	5/3/24	$22.10	$5.67	Invested Cap	$23.11	Sell	389.77%
Nu Holdings	Cayman Islan	4/30/24	$10.86	$2.96	PBV	$2.75	Sell	366.89%
Peloton	United States	5/5/24	$3.42	$0.94	EV/Sales	$0.74	SELL	363.83%
NanoX	Israel	4/17/24	$8.95	$2.52	EV/Sales	$6.69	Sell	355.16%
Roblox	US	5/3/24	38.74	11.79	EV/SALES	19.23	Sell	328.58%
Ferrari	Italy	5/3/24	$430.29	$135.09	EV/EBITDA	$38.89	Sell	318.52%
Palantir Technologies Inc.	United States	5/5/24	$23.33	$7.70	EV/Sales	$22.07	Sell	302.99%

The ultimate test… Did undervalued stocks make money?



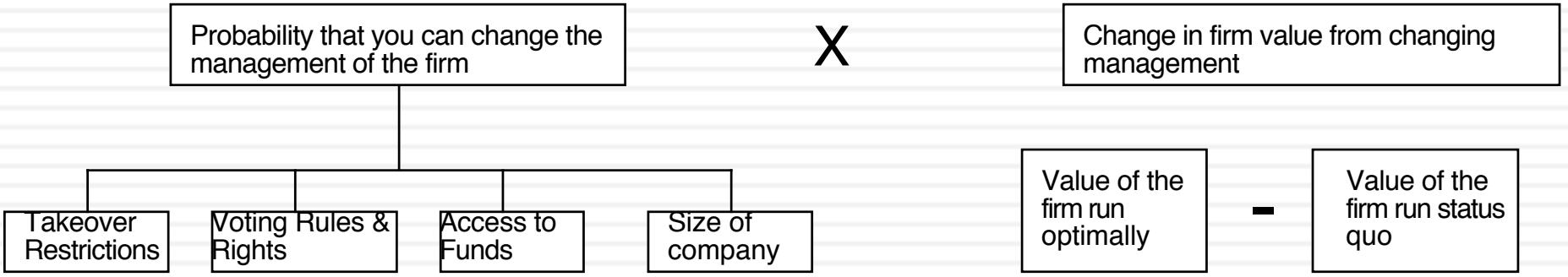
More on the winners...

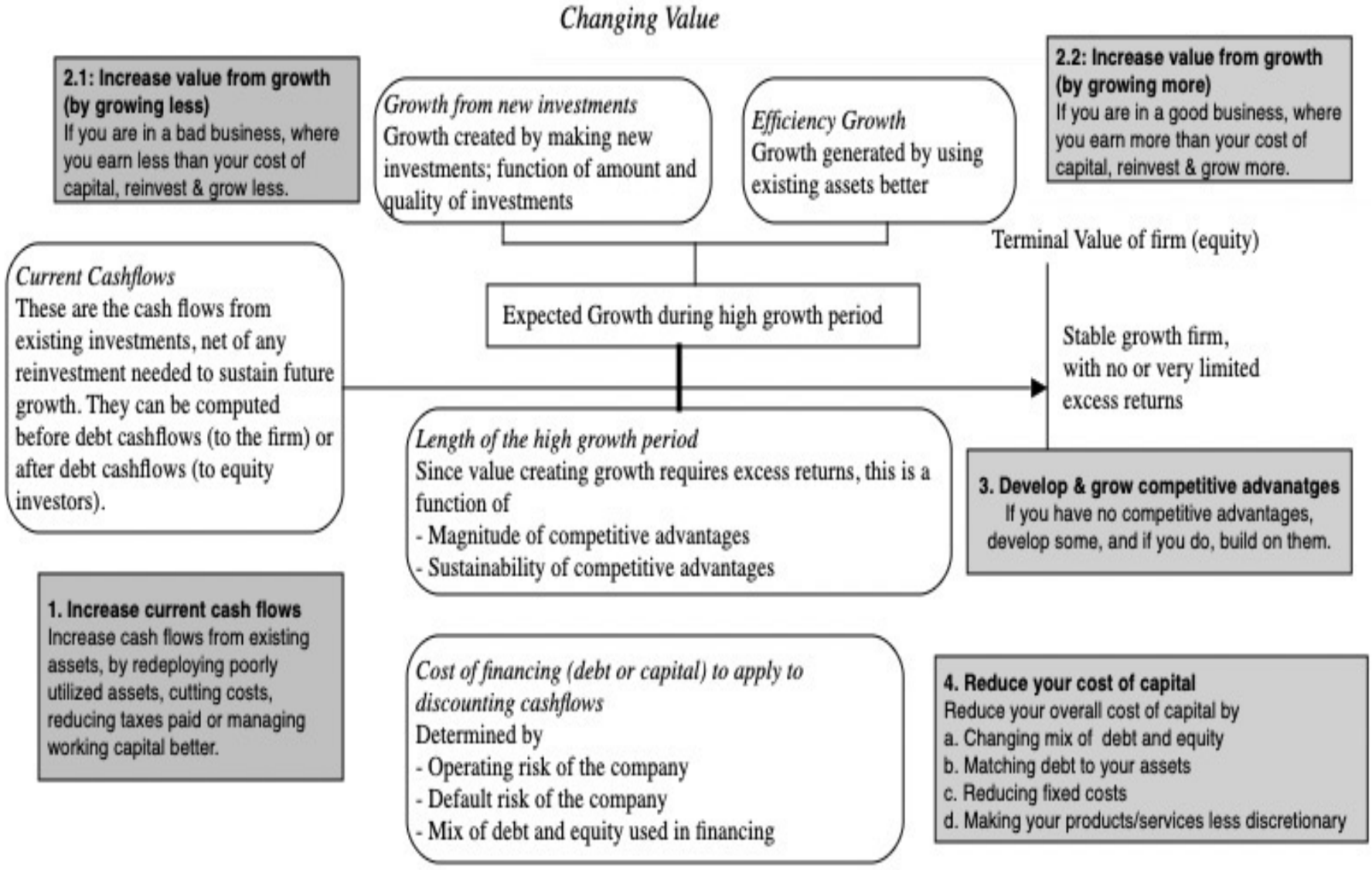
- On average, right: About 60% of all buy recommendations make money; about 45% of sell recommendations beat the market. The average return on buy recommendations was about 4% higher, on an annualized basis, than the average return on sell recommendations.
- More so on some: The excess returns on buy recommendations on small cap and emerging market companies is higher than the excess returns on large market cap companies, with higher mistakes in both directions on the former.
- Skewed payoffs: There are two or three big winners in each period, but the payoff was not always immediate. Buying Apple in 1999 would have led to negative returns for a year or more, before the turnaround occurred.
- Double whammy: Stocks that are under valued on both a DCF and relative valuation basis do better than stocks that are under valued on only one approach.

The Value of Control

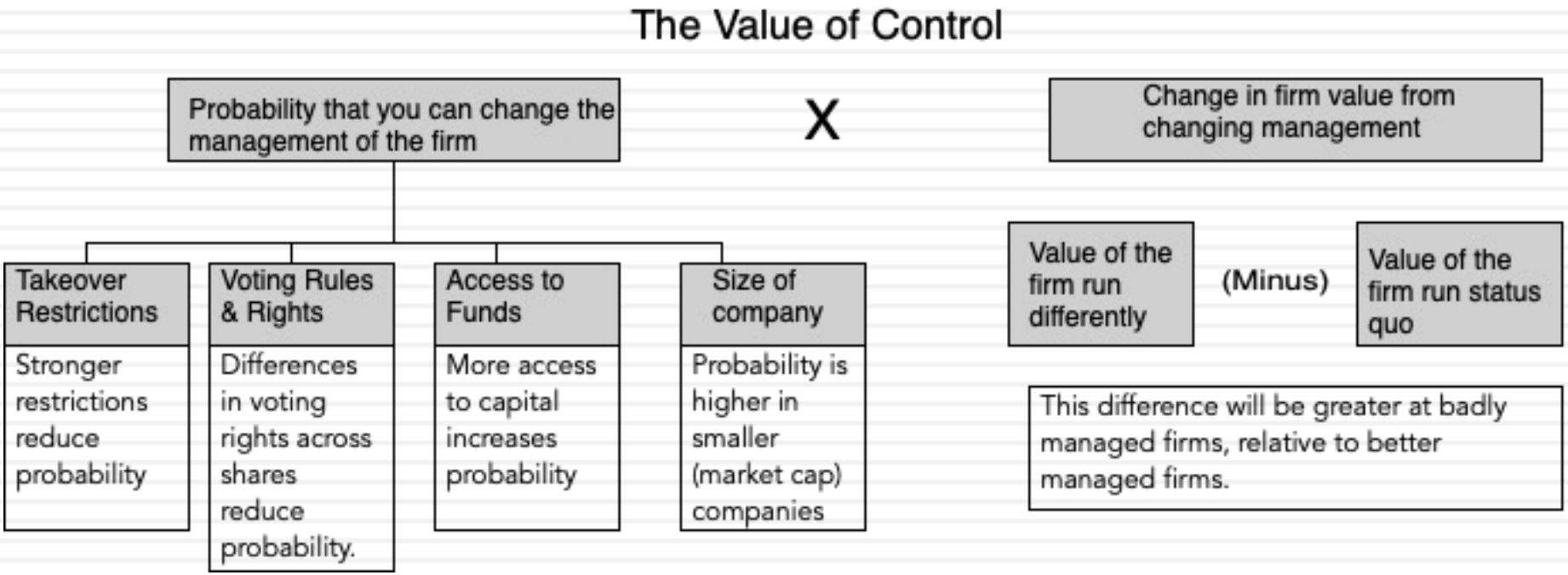
The Expected Value of Control

The Value of Control




Changing Value
2.1: Increase value from growth (by growing less)
If you are in a bad business, where you earn less than your cost of capital, reinvest & grow less.
Growth from new investments
Growth created by making new investments; function of amount and quality of investments
Efficiency Growth
Growth generated by using existing assets better
2.2: Increase value from growth (by growing more)
If you are in a good business, where you earn more than your cost of capital, reinvest & grow more.
Terminal Value of firm (equity)
Current Cashflows
These are the cash flows from existing investments, net of any reinvestment needed to sustain future growth. They can be computed before debt cashflows (to the firm) or after debt cashflows (to equity investors).
Expected Growth during high growth period
Stable growth firm, with no or very limited excess returns
Length of the high growth period
Since value creating growth requires excess returns, this is a function of
- Magnitude of competitive advantages
- Sustainability of competitive advantages
3. Develop & grow competitive advanatges
If you have no competitive advantages, develop some, and if you do, build on them.
1. Increase current cash flows
Increase cash flows from existing assets, by redeploying poorly utilized assets, cutting costs, reducing taxes paid or managing working capital better.
Cost of financing (debt or capital) to apply to discounting cashflows
Determined by
- Operating risk of the company
- Default risk of the company
- Mix of debt and equity used in financing
4. Reduce your cost of capital
Reduce your overall cost of capital by
a. Changing mix of debt and equity
b. Matching debt to your assets
c. Reducing fixed costs
d. Making your products/services less discretionary

The Expected Value of Control



Why the probability of management changing shifts over time….

- Corporate governance rules can change over time, as new laws are passed. If the change gives stockholders more power, the likelihood of management changing will increase.
- Activist investing ebbs and flows with market movements (activist investors are more visible in down markets) and often in response to scandals.
- Events such as hostile acquisitions can make investors reassess the likelihood of change by reminding them of the power that they do possess.

Estimating the Probability of Change

- You can estimate the probability of management changes by using historical data (on companies where change has occurred) and statistical techniques such as probits or logits.
- Empirically, the following seem to be related to the probability of management change:
  - Stock price and earnings performance, with forced turnover more likely in firms that have performed poorly relative to their peer group and to expectations.
  - Structure of the board, with forced CEO changes more likely to occur when the board is small, is composed of outsiders and when the CEO is not also the chairman of the board of directors.
  - Ownership structure, since forced CEO changes are more common in companies with high institutional and low insider holdings. They also seem to occur more frequently in firms that are more dependent upon equity markets for new capital.
  - Industry structure, with CEOs more likely to be replaced in competitive industries.

Manifestations of the Value of Control

- Publicly traded firms: The market price of every publicly traded firm has an embedded expected value of control in it, increasing with
  - how well or badly the firm is perceived to be run
  - the likelihood that there will be change in the firm
- Hostile acquisitions: In hostile acquisitions which are motivated by control, the control premium should reflect the change in value that will come from changing management.
- Voting and non-voting shares: The premium (if any) that you would pay for a voting share should increase with the expected value of control.
- Minority Discounts in private companies: The minority discount (attached to buying less than a controlling stake) in a private business should be increase with the expected value of control.

1. All publicly traded firms

- When investors value a publicly traded firm, they are implicitly valuing (or pricing) two versions of the firm:
  - Status Quo: The firm run by the existing management in place (with all of its pluses and minuses)
  - With change: The firm run by someone else with different ideas on how best to run it

Value = Status Quo value (1 – Probability of change) + Change value (Probability of change

2. Hostile Acquisition: Example

- In a hostile acquisition, you can ensure management change after you take over the firm. Consequently, you would be willing to pay up to the optimal value.
- As an example, Blockbuster was trading at $9.50 per share in July 2005. The optimal value per share that we estimated as $ 12.47 per share. Assuming that this is a reasonable estimate, you would be willing to pay up to $2.97 as a premium in acquiring the shares.
- Issues to ponder:
  - Would you automatically pay $2.97 as a premium per share? Why or why not?
  - What would your premium per share be if change will take three years to implement?

3. Voting and Non-voting Shares: An Example

- To value voting and non-voting shares, we will consider Embraer, the Brazilian aerospace company. As is typical of most Brazilian companies, the company has common (voting) shares and preferred (non-voting shares).
  - Status Quo Value = 12.5 billion $R for the equity;
  - Optimal Value = 14.7 billion $R, assuming that the firm would be more aggressive both in its use of debt and in its reinvestment policy.
- There are 242.5 million voting shares and 476.7 non-voting shares in the company and the probability of management change is relatively low. Assuming a probability of 20% that management will change, we estimated the value per non-voting and voting share:
  - Value per non-voting share = Status Quo Value/ (# voting shares + # non-voting shares) = 12,500/(242.5+476.7) = 17.38 $R/ share
  - Value per voting share = Status Quo value/sh + Probability of management change * (Optimal value – Status Quo Value) = 17.38 + 0.2* (14,700-12,500)/242.5 = 19.19 $R/share
- With our assumptions, the voting shares should trade at a premium of 10.4% over the non-voting shares.

4. Minority Discount: An example

- Assume that you are valuing Kristin Kandy, a privately owned candy business for sale in a private transaction. You have estimated a value of $ 1.6 million for the equity in this firm, assuming that the existing management of the firm continues into the future and a value of $ 2 million for the equity with new and more creative management in place.
  - Value of 51% of the firm = 51% of optimal value = 0.51* $ 2 million = $1.02 million
  - Value of 49% of the firm = 49% of status quo value = 0.49 * $1.6 million = $784,000
- Note that a 2% difference in ownership translates into a large difference in value because one stake ensures control and the other does not.

Alternative Approaches to Value Enhancement

- Maximize a variable that is correlated with the value of the firm. There are several choices for such a variable. It could be
  - an accounting variable, such as earnings or return on investment
  - a marketing variable, such as market share
  - a cash flow variable, such as cash flow return on investment (CFROI)
  - a risk-adjusted cash flow variable, such as Economic Value Added (EVA)
- The advantages of using these variables are that they
  - Are often simpler and easier to use than DCF value.
- The disadvantage is that the
  - Simplicity comes at a cost; these variables are not perfectly correlated with DCF value.

Value Alchemy: Acronyms and Shortcuts

- The nature of value consulting is to add mystery and magic to the process, with a proprietary twist (to make the consultant indispensable)
- In the 1990s, Stern Stewart soared by offering companies its variant, the Economic Value Added (EVA), measured as follows:
  - EVA = (Return on Capital - Cost of Capital) (Capital Invested in Project)
  - Firms were advised to focus on increasing EVA and tie top management compensation to EVA
- In the 1980s, Holt Associates offered CFROI as a measure of the cash flow return made on capital
  - It is computed as an IRR, based upon a base value of capital invested and the cash flow on that capital.

The bottom line…

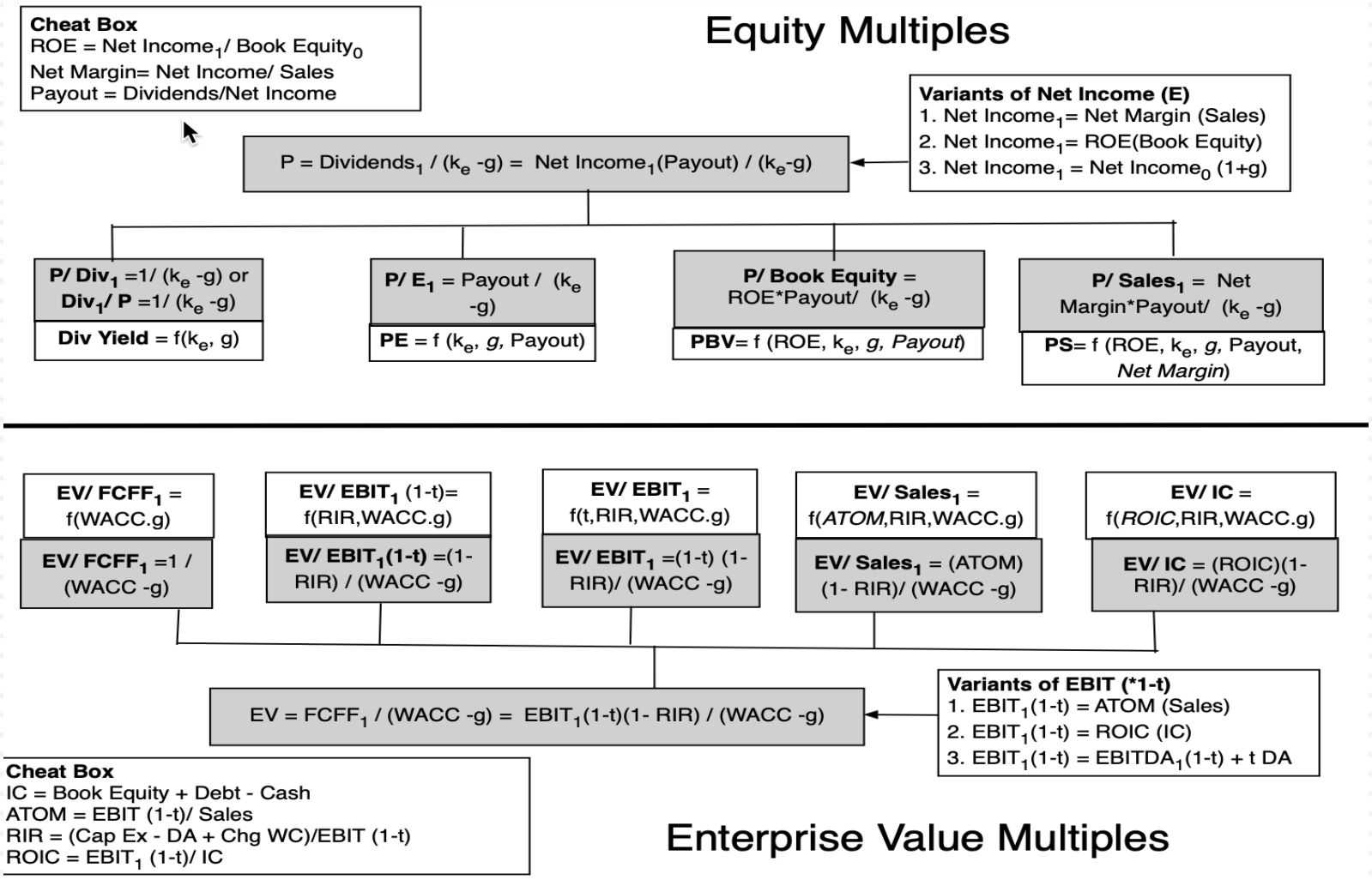
- The value of a firm is not going to change just because you use a different metric for value. All approaches that are discounted cash flow approaches should yield the same value for a business, if they make consistent assumptions.
- If there are differences in value from using different approaches, they must be attributable to differences in assumptions, either explicit or implicit, behind the valuation.
- When you use a shortcut (as you are with EVA or CFROI), you are making assumptions that firms can exploit to game the system.

Your Pricing

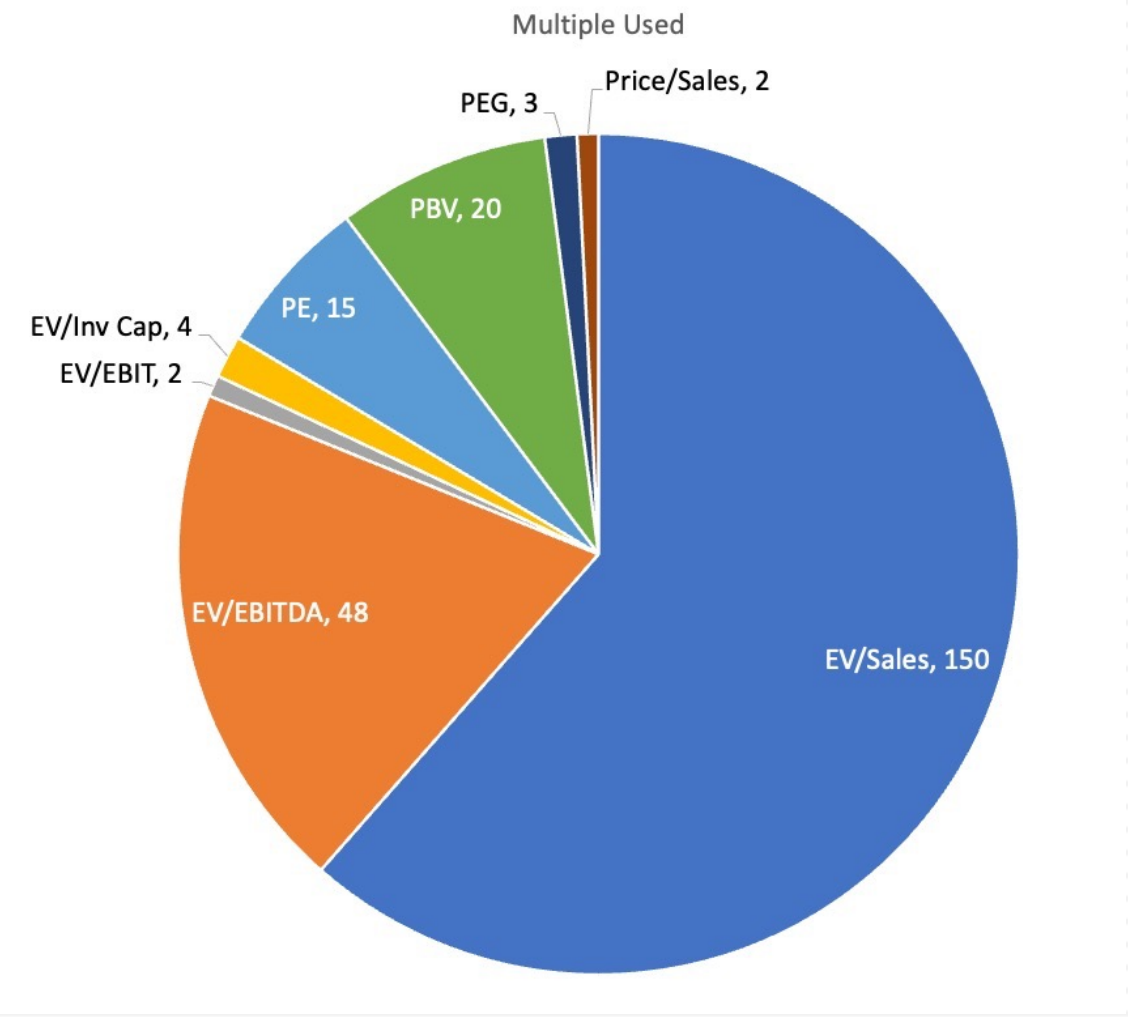
Relative Valuation: The Four Steps to Understanding Multiples

- Anna Kournikova knows PE…. Or does she?
  - In use, the same multiple can be defined in different ways by different users. When comparing and using multiples, estimated by someone else, it is critical that we understand how the multiples have been estimated
- 8 times EBITDA is not always cheap…
  - Too many people who use a multiple have no idea what its cross sectional distribution is. If you do not know what the cross sectional distribution of a multiple is, it is difficult to look at a number and pass judgment on whether it is too high or low.
- You cannot get away without making assumptions
  - It is critical that we understand the fundamentals that drive each multiple, and the nature of the relationship between the multiple and each variable.
- There are no perfect comparables
  - Defining the comparable universe and controlling for differences is far more difficult in practice than it is in theory.

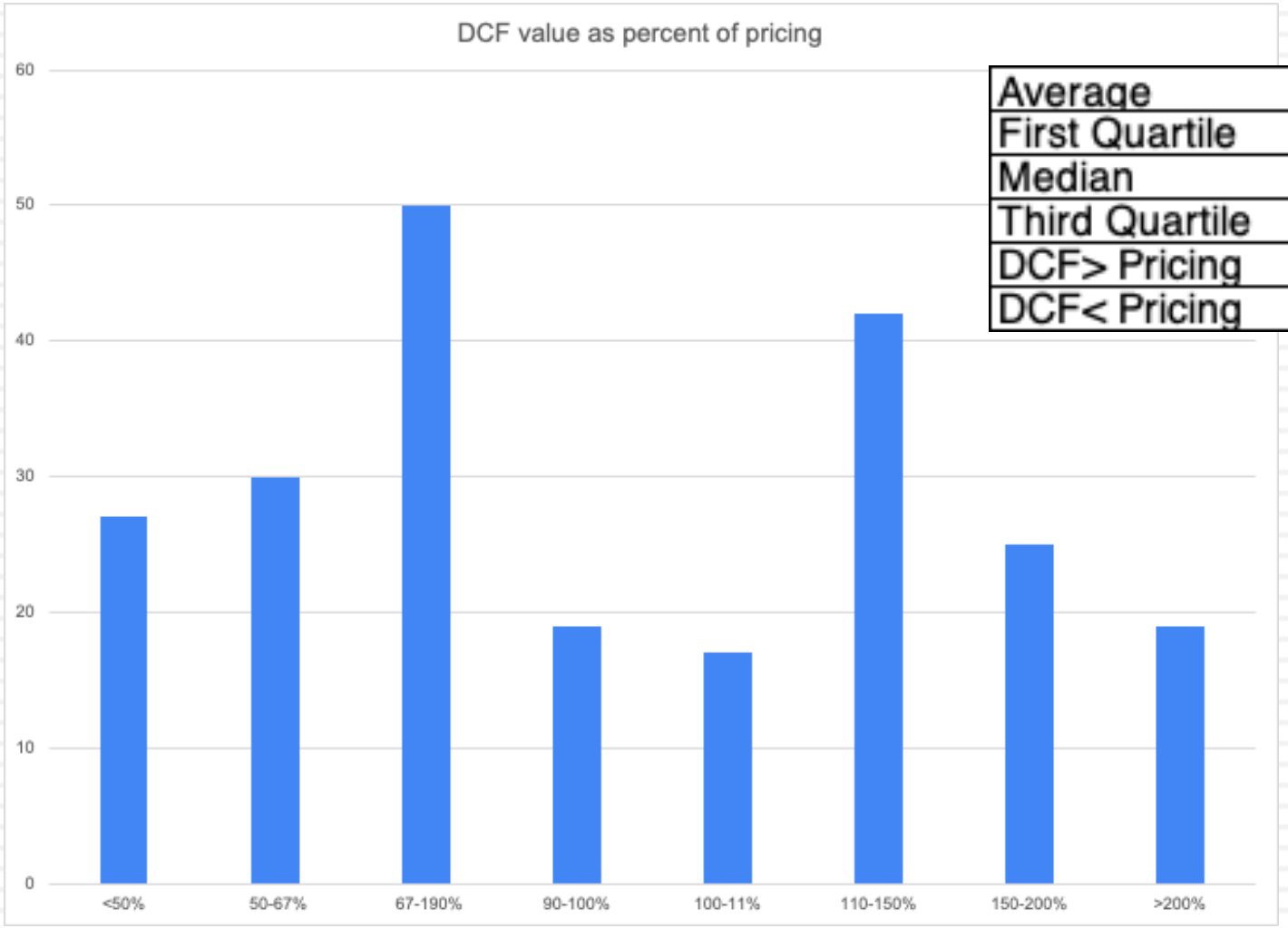
The Determinants of Multiples…



The Multiples you used were ...



DCF vs Relative Valuation



Average	14.6%
First Quartile	-32.9%
Median	-4.5%
Third Quartile	36.9%
DCF> Pricing	109
DCF< Pricing	127

Pricing Results

Average	43.5%
First Quartile	-19.7%
Median	9.8%
Third Quartile	54.7%
# underpriced	95
# overpriced	141

Most underpriced on a relative basis…

Company	Country	Date	Prce/Share	DCF Value/Share	Multiple	Pricing/share	Option value	Recommendation	Price/RV
WeWork	United States	5/5/24	$0.15	($48.08)	EV/Sales	$98.99	$0.20	Sell	0.15%
Air Arabia	UAE	5/3/24	2.66	4.43	EV/EBITDA	125.78		Buy	2.11%
Tesco PLC	United Kingdom	5/4/24	2.98	3.13	EV/Sales	24.49		Buy	12.17%
Viasat	United States	5/3/24	$17.21	$30.45	EV/Sales	$102.12	$58	Buy	16.85%
Li Auto	USA	5/5/24	$28.00	$135.05	EV/Sales	$140.40		Buy	19.94%
Paramount Global	United States	5/3/24	$12.89	$2.74	EV/Sales	$61.30		Sell	21.03%
Warner Bros. Discovery	United States	5/3/24	$7.97	$5.91	EV/Sales	$28.62	$9.89	Sell	27.85%
Ford Motors	United States	5/5/24	$12.43	$16.25	EV/Sales	$44.22		Buy	28.11%
Salesforce	United States	5/3/24	$273.66	$99.02	EV/EBITDA	$945.51		Buy	28.94%
International Workplace Group	UK	5/2/24	188	379.59	EV/EBITDA	593		Buy	31.70%
Intel	United States	5/5/24	$30.90	$27.79	EV/Sales	$96.26		Sel	32.10%
Lyft	United States	5/1/24	$15.80	$17.00	EV/Sales	$42.64		Buy	37.05%
Paypal	United States	5/4/24	65.68	$88.07	EV/Sales	173.5		Buy	37.86%
BMW	Germany	5/3/24	€ 102.50	€ 126.18	EV/Sales	€ 267.33		Buy	38.34%

Most overpriced on a relative basis…

Company	Country	Date	Prce/Share	DCF Value/Share	Multiple	Pricing/share	Option value	Recommendation	Price/RV
Beyond Meat	United States	5/5/24	$8.23	$0.00	EV/Sales	($22.08)	$0.00	Sell	NA
Giant Biogene	China	5/4/24	46.55	34.86				Sell	NA
PetCo (WOOF)	USA	5/3/24	$1.55	$1.64	EV/EBITDA	$0.00	$2.44	Hold	NA
Ferrari	Italy	5/3/24	$430.29	$135.09	EV/EBITDA	$38.89		Sell	1106.43%
Duolingo, Inc.	United States	5/5/24	$240.00	$114.13	EV/Sales	$23.90		Sell	1004.18%
Aramco	KSA	5/3/24	$29.95	$7.61	EV/Sales	$3.16		Sell	947.78%
Coinbase	United States	28/4/2024	$218.16	$44.06	EV/EBITDA	$24.04		Sell	907.49%
Uber	United States	5/5/24	$69.23	$78.56	PBV	$11.26		Buy	614.83%
Tesla	United States	5/5/24	$181.14	$172.46	PE	$37.00		Sell	489.57%
Peloton	United States	5/5/24	$3.42	$0.94	EV/Sales	$0.74	$0.72	SELL	462.16%
ARM Holdings PLC	United Kingdom	5/4/24	$101.72	$41.34	EV/Inv Capital	$22.20		Sell	458.20%
Netflix	United States	5/5/24	$579.34	$700.23	EV/EBITDA	$139.36		Buy	415.71%
Nu Holdings	Cayman Islands	4/30/24	$10.86	$2.96	PBV	$2.75		Sell	394.91%
Lockheed Martin	United States	5/3/24	$461.91	$360.73	EV/Sales	$125.82		Sell	367.12%
Airbnb	United States	5/5/24	$159.71	$88.28	EV/Sales	$50.86		Sell	314.02%

Contingent Claim (Option) Valuation

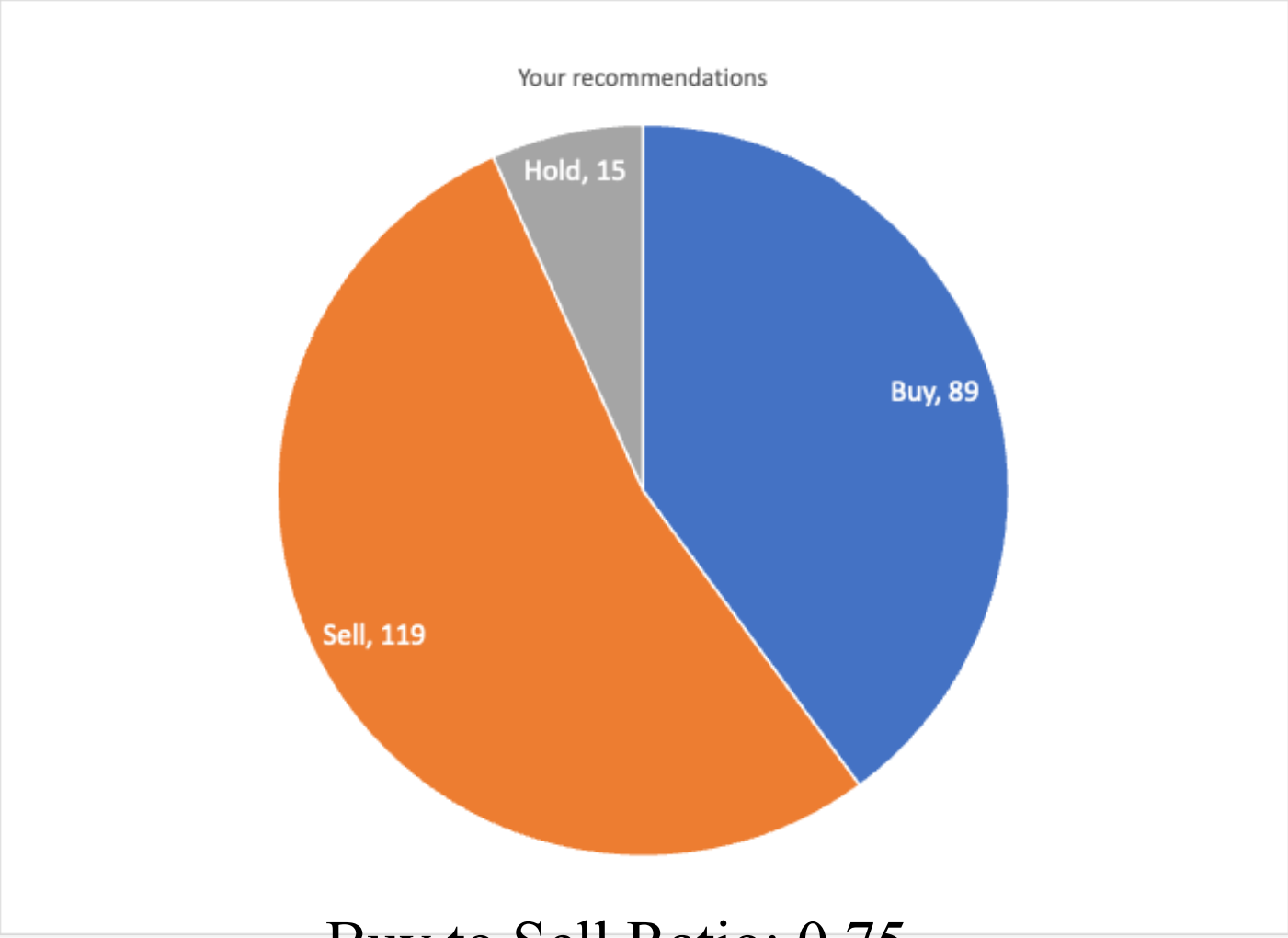
- Options have several features
  - They derive their value from an underlying asset, which has value
  - The payoff on a call (put) option occurs only if the value of the underlying asset is greater (lesser) than an exercise price that is specified at the time the option is created. If this contingency does not occur, the option is worthless.
  - They have a fixed life
- Any security that shares these features can be valued as an option.

- Number of firms valued using option models = 8
- Median Percent increase in value over DCF value= 41.25%

Acting on valuation: It is not just an academic exercise

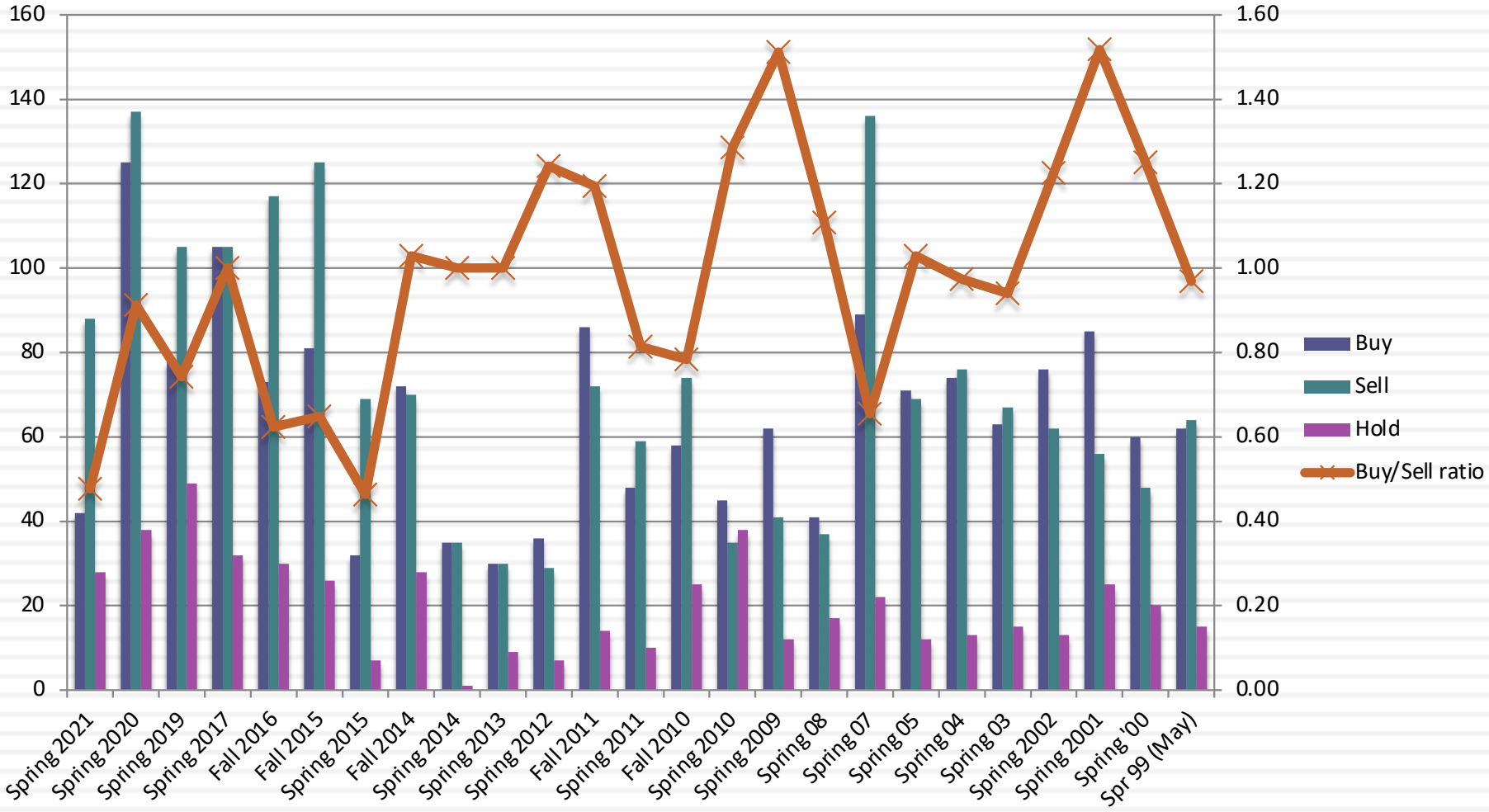
a. I am not sure yet: Uncertainty is not a shield against action. If you wait until you feel "certain" about your valuation, you will never act.
b. All believers now? Ultimately, you have to believe in some modicum of market efficiency. Markets have to correct their mistakes for your valuations to pay off.
c. The law of large numbers: Assuming your valuations carry heft, you are far more likely to be right across many companies than on any individual one.

Your recommendations were to…



Buy to Sell Ratio: 0.75

Prior semesters



Picking your valuation approach

- Asset characteristics
  - Marketability
  - Cash flow generating capacity
  - Uniqueness
- Your characteristics
  - Time horizon
  - Reasons for doing the valuation
  - Beliefs about markets

What approach would work for you?

- As an investor, given your investment philosophy, time horizon and beliefs about markets (that you will be investing in), which of the the approaches to valuation would you choose?

a. Discounted Cash Flow Valuation
b. Relative Valuation
c. Neither. I believe that markets are efficient.

Story Tellers? Number Crunchers?

- If you are a storyteller, I hope that you have
  - More confidence in your number crunching
  - More discipline in your stories
  - Less intimidation, when confronted with number crunchers
- If you are a number cruncher, I hope that you have
  - More willingness to put stories behind your numbers
  - More imagination in your number crunching
  - More understanding, when confronted with story telling

Some Not Very Profound Advice

1. Its all in the fundamentals.
2. Focus on the big picture. Don't sweat the small stuff and don't get distracted.
3. Anecdotes mean little and experience does not equal knowledge.
4. Keep your perspective. It is only a valuation.
5. In investing, luck dominates skill and knowledge.
6. Preseve your options to expand, delay & abandon