VALUE: WHY IT MATTERS, WHAT IT IS, HOW IT HELPS

CARe

Philadelphia, June 6-7, 2011

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Agenda

- Why value matters
- What value is (and is not)
- How focusing on value can inform strategic decisions:
  - Does maximizing earnings also maximize value?
  - Can reinsurance add value? If so, how much?
  - Which reinsurance program should I purchase?
  - Does an acquisition add value? How much?
  - Can changing asset allocation increase value?
- Conclusions and questions

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Caveats

- Valuation models can differ substantially in their complexity and comprehensiveness.
- In this brief presentation I will use a simple valuation model
- In advising clients we use a more elaborate and comprehensive model
- But the arguments presented here are valid in both cases

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WHY IT MATTERS

What happens at your firm?

- Senior managers claim that their objective is to devise and implement strategies that (a) increase earnings, or (b) add value to the firm.
- In practice, strategic decisions are preceded and informed by analyses of their likely effect on the firm’s (a) earnings, or (b) value.
- There are regular financial reports that focus on the firm’s (a) earnings, or (b) changes in value.
- Compensation for senior management depends mostly on the firm’s (a) earnings, (b) changes in value, or (c) stock market performance.

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What happens at your firm?

If your firm is publicly traded . . .

- Senior executives typically measure the value of the firm by its market capitalization (the number of its shares multiplied by their price)
  - True or false?
- Senior executives believe that a rising stock price indicates that the firm is being well-managed
  - True or false?

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Stock price versus value

If your firm is publicly traded . . .

- Senior executives agree that the value of your firm fell by 20+% on October 19, 1987
  - True or false?
- Senior executives agree that the value of your firm fell by roughly 50% between October 2007 and March 2009
  - True or false?
- In most instances, senior executives believe that a falling stock price indicates that the firm is being poorly managed
  - True or false?

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Some implications

- Executives often claim to use increased firm value as a criterion for decisions and strategies. But there is little evidence that they actually do.
  - They rarely measure value or value-added, but focus instead on earnings (earnings ≠ value-added)
  - They often use market capitalization as a measure of value, except when the stock price is falling
  - Value-added plays no role in incentive pay
- What isn't measured isn't managed!

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More implications

- Some widely-touted performance measures assume – incorrectly, in my view – that stock prices accurately reflect changes in real economic value added
- But even if that were true, stock price is insufficiently granular to be useful for evaluating particular past decisions, and it provides no guidance for new ones
- Implication: there is a need for an independent measure of the value of a firm, for making strategic decisions and measuring performance
- What isn't measured isn't managed!

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WHAT VALUE IS

…and is not

What value is (and is not)

- Asset-Liability Management (ALM), a precursor to Enterprise Risk Management (ERM), focused on protecting the "economic value of the firm" from changes in interest rates
- ALM defined the "economic value of the firm" as its "economic surplus," consisting of the market value of the firm's assets less the present value of its liabilities
- This is essentially the firm's runoff value or liquidation value (ignoring associated costs)
- For most firms, using "economic surplus" as a value measure makes no sense at all. Here's why . . .

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What value is (2)

- The owners of a firm (shareholders or policyholders) can receive this liquidation or runoff value, or else receive dividends and share value appreciation from operating the firm as a going concern
- You can either liquidate the firm or run it, but not both
- Rational owners will choose the alternative (liquidation or continued operation) that is the more valuable to them
- In most cases, the value of the firm as a going concern, its franchise value, exceeds its runoff value

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What value is: an example

- Consider Progressive's balance sheet and economic value at year-end 2003:
  - Assets: 16.3 billion, short duration
  - Liabilities: 11.3 billion, short duration
  - Economic surplus: 5.0 billion, short duration
    - Note: Progressive's economic surplus was virtually identical to its book value
- One measure of the value of something is the amount that reasonable investors would pay to acquire it
- How much would you have paid to buy Progressive?

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What value is: an example (2)

- At YE 2003 Progressive's shareholders knew
  - Book value per share = $23.25
  - Market cap = 216.4M shares × $83.64 share price
- Progressive's market capitalization was what its shareholders were collectively willing to pay to own it
  - At year-end 2003 that was $18.1B, or nearly $2B more than Progressive's assets!!!
- If economic surplus is a correct measure of value, then Progressive's investors were not just wrong but insanely wrong. That seems improbable.

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What value is

- Why would investors be willing to pay so much for Progressive? Because it was worth far more as a going concern than as a firm in liquidation or runoff.
- So the value of a firm is the maximum of
  - (a) its liquidation/runoff value or
  - (b) its franchise value, its value as a going concern
- So we need a model for valuing a going concern that is
  - Based on fundamental and observable inputs
  - Sufficiently specific to inform strategic decisions
  - Supported by available evidence

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Components of value

A firm's value as a going concern should reflect

- Its current earnings and their expected future growth
- The sustainability of its earnings and growth rate
- A discount rate with an appropriate risk premium
- Its liquidation value if the firm becomes impaired
  - In this presentation, I will assume this is zero

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Value reflects earnings and risk

- Sustainability – a measure of safety – is crucial
- Most insurers have a business model that imposes certain constraints to which they must conform.
- Casualty insurers, for example, must maintain a high financial rating to convince clients of their ability to pay claims in the distant future, despite interim losses
- Sustainability is the annual probability that the firm will continue to conform to the constraints imposed by its business model (e.g., maintain its rating)
- In simulations, a firm's earnings cease when they violate their business model, even if they are solvent. Sustainability is about viability, not ruin.

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Progressive at YE 2003: a going concern valuation

	PGR	YE 2003	
E	Initial earnings	1.26	billion
r	Discount rate, with risk premium	10.0%	*
DF	Discount Factor = 1/(1+r)	90.9%	
g	Expected growth rate (3-yr actual = 17.6%)	9.0%	
GF	Growth Factor = 1+g	1.09	
p	Sustainability (annual probability)	94.9%	*
Value	(as a going concern) =E*p*DF/(1-GF*p*DF)	18.6	billion
	Constraint: GF*p*DF<1		
V/E	Value/Earnings (analogous to P/E ratio)	14.7	
	Actual market capitalization at year-end	18.1	billion

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Progressive at YE 2003/10: a going concern valuation

	PGR	YE 2003	YE 2010	
E	Initial earnings	1.26	1.07	billion
r	Discount rate, with risk premium	10.0%	10.0%	*
DF	Discount Factor = 1/(1+r)	90.9%	90.9%	
g	Expected growth rate	9.0%	7.0%	
GF	Growth Factor = 1+g	1.09	1.07	
p	Sustainability (annual probability)	94.9%	95.6%	*
Value	(as a going concern) =E*p*DF/(1-GF*p*DF)	18.6	13.2	billion
V/E	Value/Earnings (analogous to P/E ratio)	14.7	12.3	
	Actual market capitalization at year-end	18.1	13.2	billion

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Comments and caveats

- Growth rate and sustainability are difficult to estimate
- However, one can infer what combinations of the two values are implied by a firm’s observed market capitalization at a given time

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Equivalent combinations of growth and sustainability

Growth Rate	YE 2003 Sustainability	YE 2010 Sustainability
15%	90.2%	89.4%
14%	90.9%	90.1%
13%	91.7%	90.8%
12%	92.5%	91.6%
11%	93.3%	92.4%
10%	94.0%	93.1%
9%	94.9%	93.9%
8%	95.7%	94.7%
7%	96.5%	95.6%
6%	97.4%	96.4%
5%	98.2%	97.3%
4%	99.1%	98.1%

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FOCUSING ON VALUE TO INFORM STRATEGIC DECISIONS

Earnings vs. franchise value

- Consider a directly-marketed personal lines insurer or division
- A franchise value model recognizes the reality that current customers often have a high renewal rate
  - Customer retention offsets initial marketing costs
  - Question: could renewal discounts increase franchise value by increasing renewals?

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Earnings vs. franchise value (2)

- In this particular problem, renewal discounts were offered only to customers who had insured with the firm for more than five years
- An appropriate analysis focuses only on clients who are eligible for the renewal discount
- These clients would pay less, but would likely have higher renewal rates

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Earnings vs. franchise value (3)

	Existing book of business (excludes newly acquired business)	No discount	With discount
E	Initial earnings	100	95
r	Discount rate, with risk premium	10.0%	10.0%
DF	Discount Factor = 1/(1+r)	90.9%	90.9%
g	Growth rate	-15%	-10%
GF	Growth Factor = 1+g	85%	90%
p	Probability of sustainability (annual)	99%	99%
Value	(as a going concern) =E*p*DF/(1-GF*p*DF)	383.0	450.0
V/E	Value/Earnings (analogous to P/E ratio)	3.8	4.7
	Increase in franchise value		67.0

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Earnings vs. franchise value (4)

- With the discount, the existing book of business will have lower earnings, but they will last longer, on average. The increased longevity of earnings more than offsets the lower level of earnings.
- A myopic strategy of maximizing annual earnings takes into account the level of earnings but not their longevity.
- So myopically maximizing annual earnings doesn't necessarily maximize franchise value!

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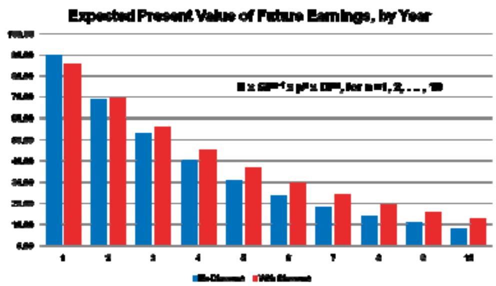
PV Earnings with & w/o discount



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Does reinsurance add value?

- Purchasing reinsurance reduces earnings, because it is costly
- On the other hand, an appropriate reinsurance program can prolong earnings (increase sustainability) because it can prevent losses that can cripple a business model
- Like renewal discounts, the benefit of increased sustainability can more than offset the costs of the reinsurance program
- An appropriate reinsurance program protects the current year's earnings, but also increases the firm's probability of surviving to enjoy future earnings.
- This is reflected in franchise value

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Effect of reinsurance on value

Value Added by 1-year Reinsurance Program		
	Gross	**With Reinsurance**
Earnings	35.6 M	31.3 M
Sustainability	95.9%	99.6%
Value	**484.3**	**502.6**
Value Added	**---**	**18.2**

- Reinsurance reduces earnings by $4.3 M, but increases franchise value by $18.2 M
- So maximizing earnings and maximizing value can conflict

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Which reinsurance option is best?

- We've all become accustomed to presenting and seeing "efficient frontiers" of alternative reinsurance programs
- All of them show a tradeoff between earnings and earnings volatility: buying more reinsurance (at greater cost and reduced earnings) lowers earnings volatility
- This tradeoff is typically presented as a matter of taste or "risk appetite"
- A valuation model calculates the effect on franchise value of this tradeoff between earnings and volatility
- "Risk appetite" is ill-defined and a poor substitute for a robust measure of franchise value

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Comparing reinsurance programs

Value Added by Alternative 1-year Reinsurance Programs							
	Gross	**A**	**B**	**C**	**D**	**E**	**F**
Earnings	258	123	131	134	156	129	132
Sustainability	96.4%	99.5%	99.5%	99.5%	99.5%	99.6%	99.4%
Value	**3,755**	**3,764**	**3,771**	**3,774**	**3,795**	**3,774**	**3,766**
Value Added	**---**	**9**	**16**	**19**	**40**	**19**	**11**

- These alternatives are all on the efficient frontier, and so are roughly equivalent. Choice is presented as a matter of taste.
- A valuation model shows that these alternative programs have significantly different effects on franchise value!!!

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Buying a book of business

	Before	After
Earnings	47.0 M	74.5 M
Sustainability	97.5%	96.2%
Value	839 M	1,052 M
Value Added	---	213 M

- The enlarged book of business has higher earnings but lower sustainability. The purchase price should be less than the value added of $213 M

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How asset allocation affects value

	Before Change	After Change
Earnings (including capital gains)	74.5 M	62.0 M
Sustainability	96.2%	97.7%
Value	1,052 M	1,138 M
Value Added		86 M

- This firm invested heavily in common stocks, which performed very well. But stock volatility lowers sustainability. Switching a portion of the stock portfolio to bonds lowers earnings but increases franchise value by $86 M.
- This should be compared to buying a put option

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Conclusions

- Changes in firm value could and should play a major role in
  - Performance measurement
  - Incentive pay
  - Strategic decisions concerning mergers and acquisitions
  - Allocation of assets to alternative asset classes
  - Managing the mix of business lines
- A puzzle: Why hasn't this happened?

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Questions for managers

- We calculate lots of measures that we consider to be indirect measures of value: we allocate capital, calculate return on capital, scrutinize peer firm performance, try to boost our price/earnings ratio, and hope that all of this will help to increase the value of our firm
- Why don't we instead adopt and calculate a measure of our firm's value and use that to measure past performance and evaluate alternative future opportunities?
- Such a measure should allow for potential differences between market capitalization and actual franchise value

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References for this model

- The model presented here has been described in greater detail in the following papers:
- William Panning. 2006. Managing the Invisible: Measuring Risk, Managing Capital, Maximizing Value. http://www.actuarialfoundation.org/programs/actuarial/erm.shtml
- Neil Bodoff. 2011. Sustainability of Earnings: A Framework for Quantitative Modeling of Strategy, Risk, and Value. http://www.actuarialfoundation.org/programs/actuarial/erm.shtml

Appendix: The value equation

- $V = E*p*DF + E*GF*p^2*DF^2 + \ldots$
- $V = E*p*DF*(1+GF*p*DF+GF^2*p^2*DF^2+\ldots+GF^{n-1}*p^{n-1}*DF^{n-1})$
- $V = E*p*DF*(1-GF^n*p^n*DF^n)/(1-GF*p*DF)$
- Constraint: $GF*p*DF<1$
- As $n \rightarrow \infty$, the term $GF^n*p^n*DF^n$ approaches zero, so that
- $V = E*p*DF/(1-GF*p*DF)$
- Note: this is a simplification of a considerably more complex multi-period multi-factor valuation model
- Hamming: “The purpose of computing is insight, not numbers”

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