

## Application Test: Getting to the Optimal

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- ☐ Based upon your analysis of both the firm's capital structure and investment record, what path would you map out for the firm?
  - a. Immediate change in leverage
  - b. Gradual change in leverage
  - c. No change in leverage
- ☐ Would you recommend that the firm change its financing mix by
  - a. Paying off debt/Buying back equity
  - b. Take projects with equity/debt

# The Mechanics of Changing Debt Ratio quickly...

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## To decrease the debt ratio

*Sell operating assets and use cash to pay down debt.*

*Issue new stock to retire debt or get debt holders to accept equity in the firm.*

Assets	Liabilities
Cash	Debt
Operating Assets in place	
Growth Assets	Equity

*Sell operating assets and use cash to buy back stock or pay or special dividend*

*Borrow money and buy back stock or pay a large special dividend*

## To increase the debt ratio

# The mechanics of changing debt ratios over time... gradually...

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- To change debt ratios over time, you use the same mix of tools that you used to change debt ratios gradually:
  - ▣ Dividends and stock buybacks: Dividends and stock buybacks will reduce the value of equity.
  - ▣ Debt repayments: will reduce the value of debt.
- The complication of changing debt ratios over time is that firm value is itself a moving target.
  - ▣ If equity is fairly valued today, the equity value should change over time to reflect the expected price appreciation:
  - ▣ Expected Price appreciation = Cost of equity – Dividend Yield
  - ▣ Debt will also change over time, in conjunction as firm value changes.

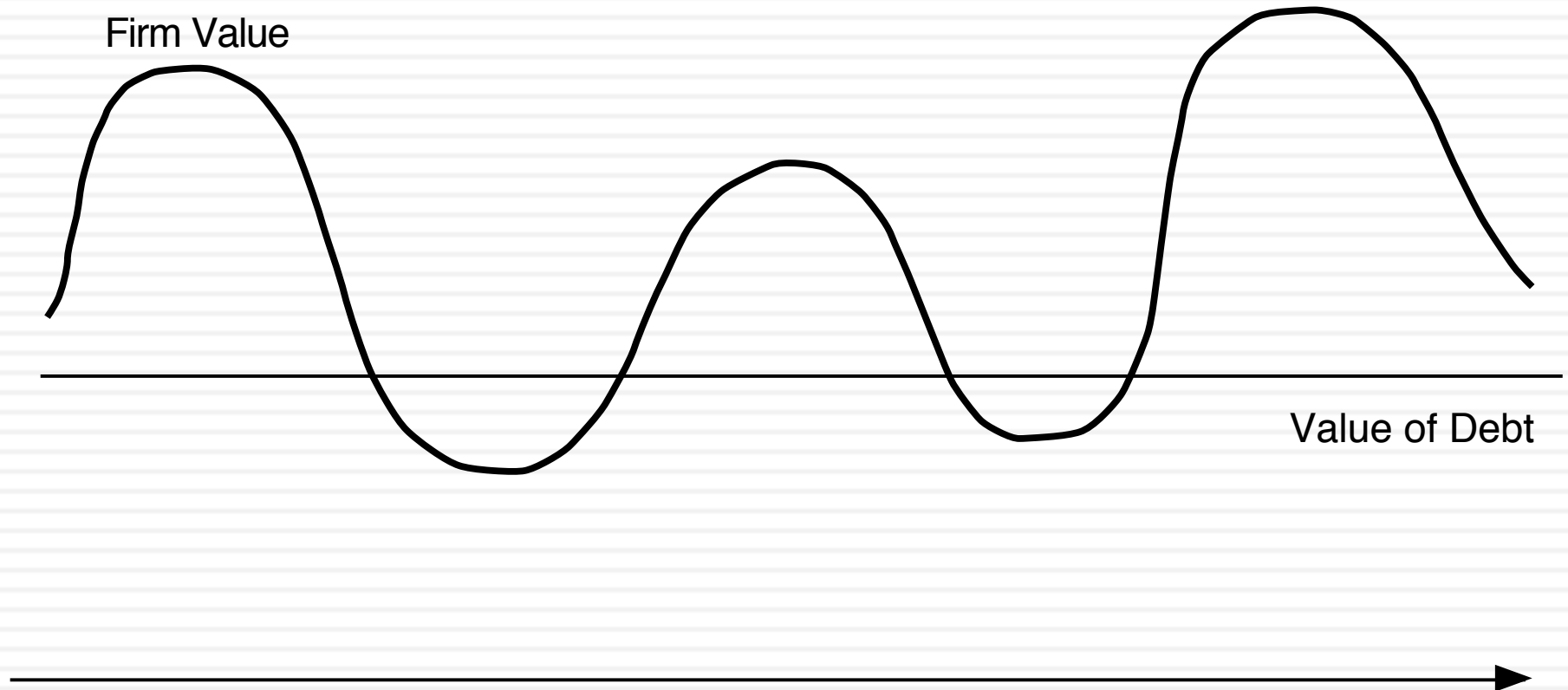
# Designing Debt: The Fundamental Principle

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- The objective in designing debt is to make the cash flows on debt match up as closely as possible with the cash flows that the firm makes on its assets.
- By doing so, we reduce our risk of default, increase debt capacity and increase firm value.

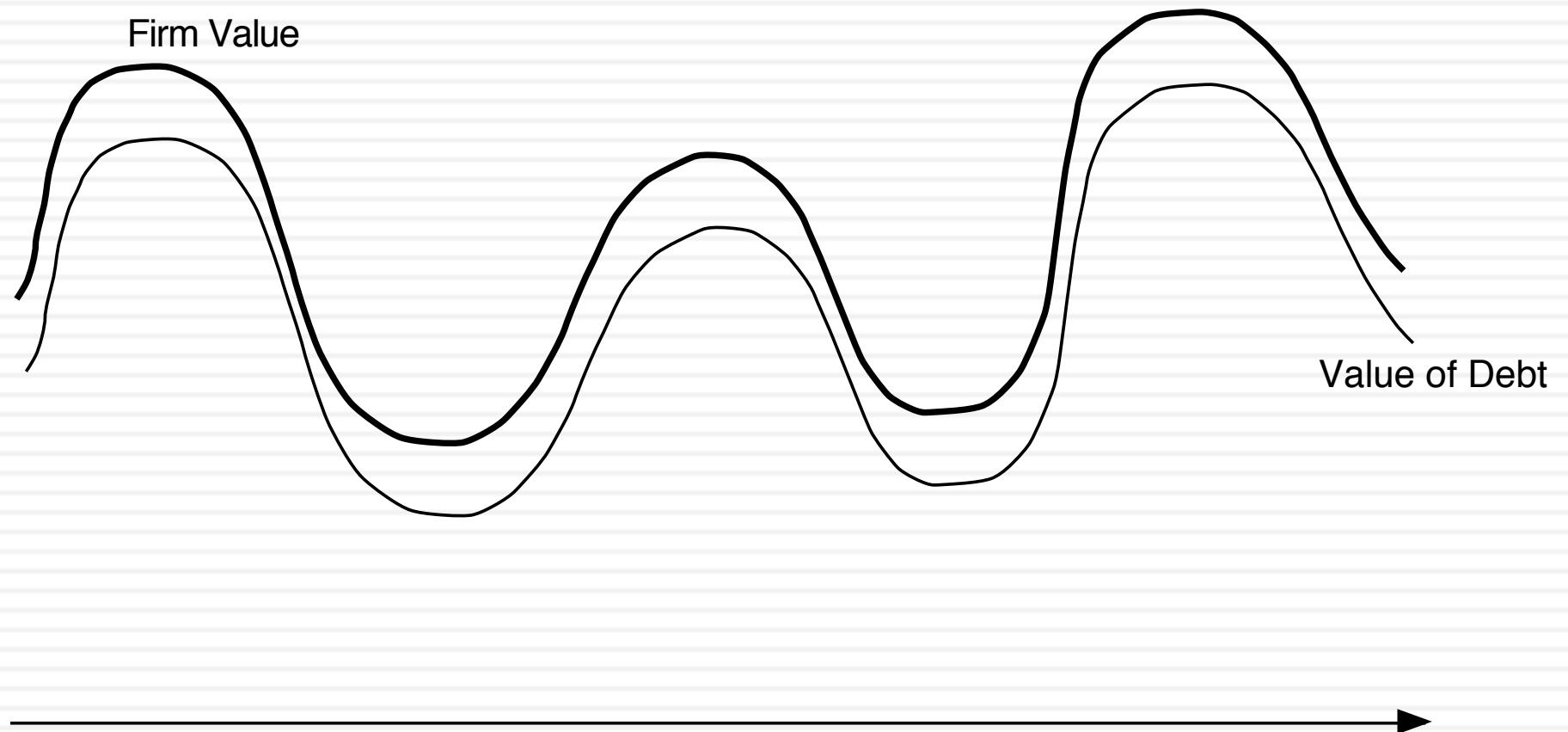
# Firm with mismatched debt

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# Firm with matched Debt

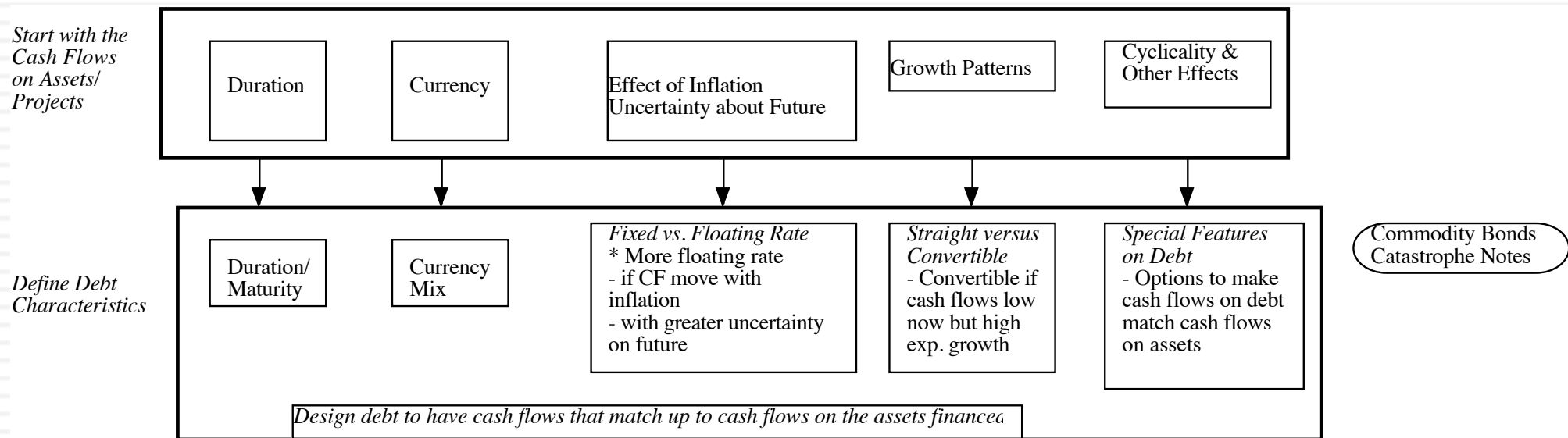
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# Design the perfect financing instrument

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- The perfect financing instrument will
  - ▣ Have all of the tax advantages of debt
  - ▣ While preserving the flexibility offered by equity

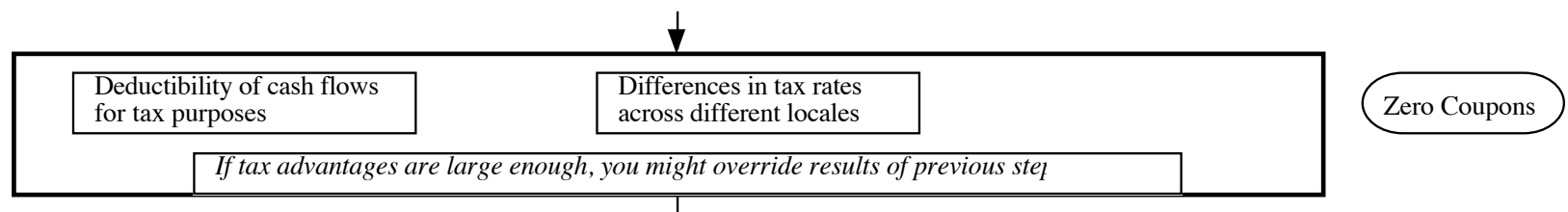


# Ensuring that you have not crossed the line drawn by the tax code

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- All of this design work is lost, however, if the security that you have designed does not deliver the tax benefits.
- In addition, there may be a trade off between mismatching debt and getting greater tax benefits.

*Overlay tax preferences*



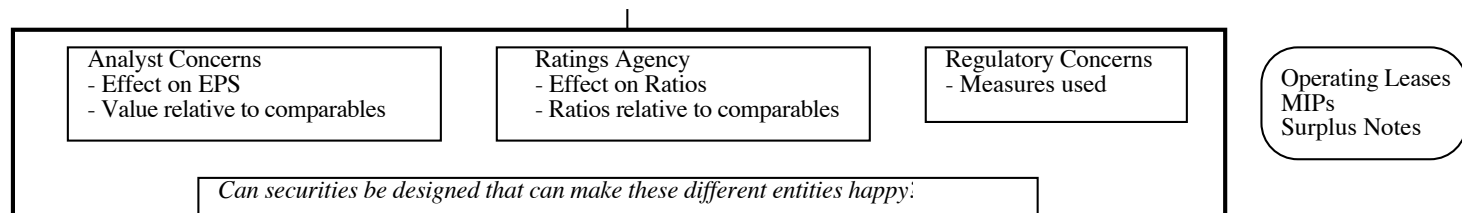


# While keeping equity research analysts, ratings agencies and regulators applauding

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- ❑ Ratings agencies want companies to issue equity, since it makes them safer.
- ❑ Equity research analysts want them not to issue equity because it dilutes earnings per share.
- ❑ Regulatory authorities want to ensure that you meet their requirements in terms of capital ratios (usually book value).
- ❑ Financing that leaves all three groups happy is nirvana.

*Consider  
ratings agency  
& analyst concerns*



Operating Leases  
MIPs  
Surplus Notes

# Debt or Equity: The Strange Case of Trust Preferred

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- Trust preferred stock has
  - ▣ A fixed dividend payment, specified at the time of the issue
  - ▣ That is tax deductible
  - ▣ And failing to make the payment can give these shareholders voting rights
- When trust preferred was first created, ratings agencies treated it as equity. As they have become more savvy, ratings agencies have started giving firms only partial equity credit for trust preferred.

# Debt, Equity and Quasi Equity

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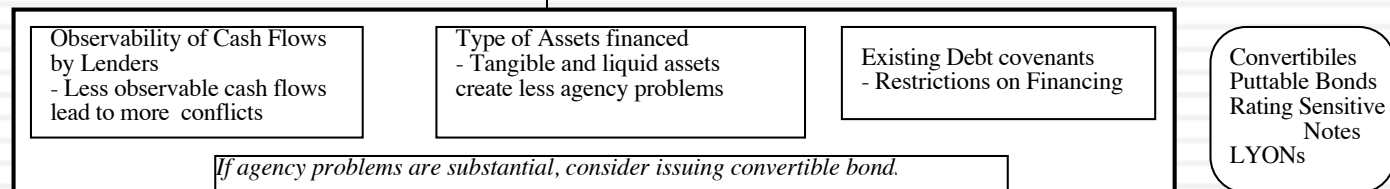
- Assuming that trust preferred stock gets treated as equity by ratings agencies, which of the following firms is the most appropriate firm to be issuing it?
  - a. A firm that is under levered, but has a rating constraint that would be violated if it moved to its optimal
  - b. A firm that is over levered that is unable to issue debt because of the rating agency concerns.

# Soothe bondholder fears

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- There are some firms that face skepticism from bondholders when they go out to raise debt, because
  - ▣ Of their past history of defaults or other actions
  - ▣ They are small firms without any borrowing history
- Bondholders tend to demand much higher interest rates from these firms to reflect these concerns.

*Factor in agency conflicts between stock and bond holders*



# And do not lock in market mistakes that work against you

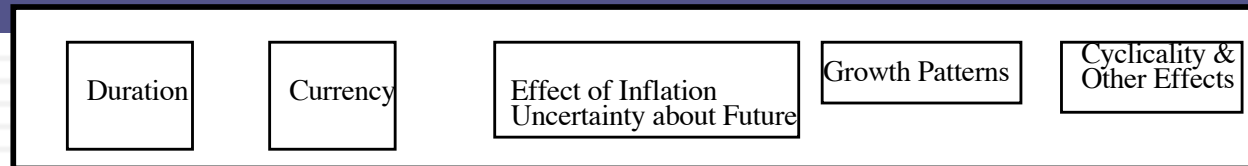
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- Ratings agencies can sometimes under rate a firm, and markets can under price a firm's stock or bonds. If this occurs, firms should not lock in these mistakes by issuing securities for the long term. In particular,
  - ▣ Issuing equity or equity based products (including convertibles), when equity is under priced transfers wealth from existing stockholders to the new stockholders
  - ▣ Issuing long term debt when a firm is under rated locks in rates at levels that are far too high, given the firm's default risk.
- What is the solution
  - ▣ If you need to use equity?
  - ▣ If you need to use debt?

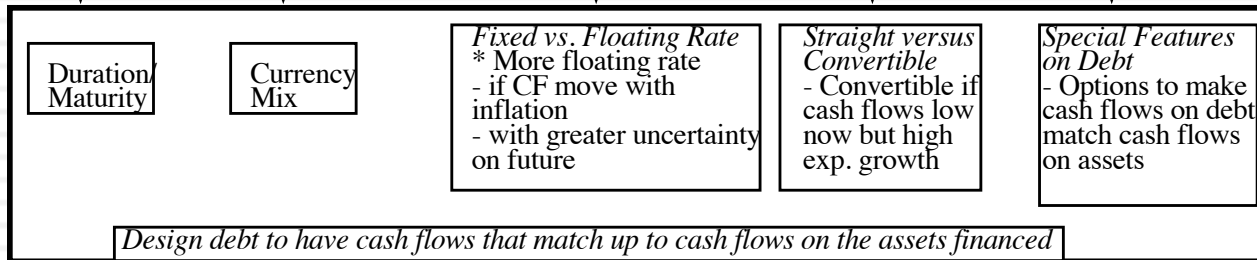
# Designing Debt: Bringing it all together

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*Start with the Cash Flows on Assets/ Projects*

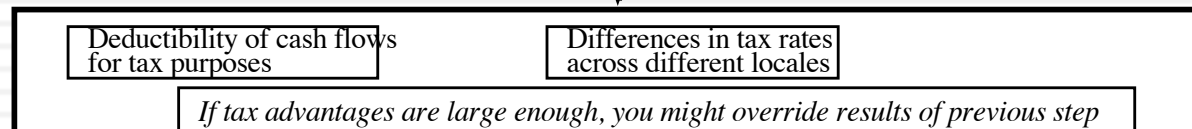


*Define Debt Characteristics*



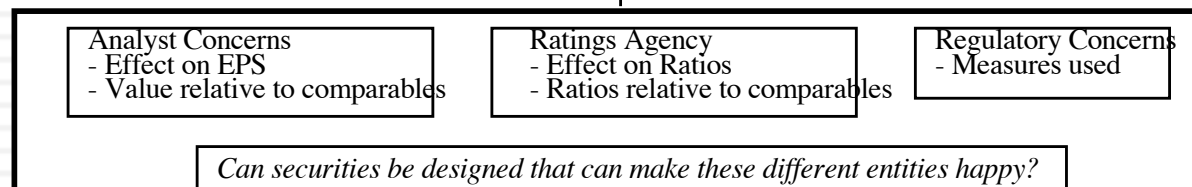
Commodity Bonds  
Catastrophe Notes

*Overlay tax preferences*



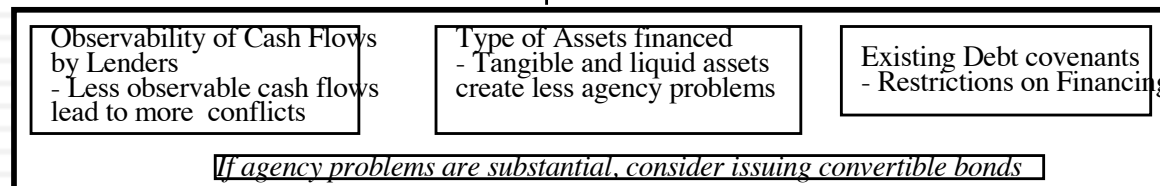
Zero Coupons

*Consider ratings agency & analyst concerns*



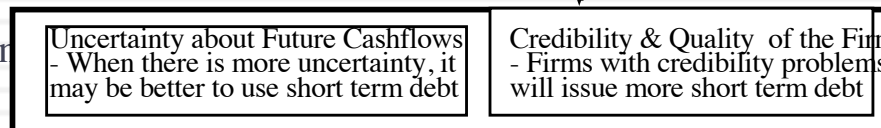
Operating Leases  
MIPs  
Surplus Notes

*Factor in agency conflicts between stock and bond holders*



Convertibles  
Puttable Bonds  
Rating Sensitive Notes  
LYONs

*Consider Information Asymmetries*



# Approaches for evaluating Asset Cash Flows

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## I. Intuitive Approach

- ▣ Are the projects typically long term or short term? What is the cash flow pattern on projects?
- ▣ How much growth potential does the firm have relative to current projects?
- ▣ How cyclical are the cash flows? What specific factors determine the cash flows on projects?

## II. Project Cash Flow Approach

- ▣ Estimate expected cash flows on a typical project for the firm
- ▣ Do scenario analyses on these cash flows, based upon different macro economic scenarios

## III. Historical Data

- ▣ Operating Cash Flows
- ▣ Firm Value

# I. Intuitive Approach - Disney

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<i>Business</i>	<i>Project Cash Flow Characteristics</i>	<i>Type of Financing</i>
Studio entertainment	<p>Movie projects are likely to</p> <ul style="list-style-type: none"> <li>• Be short-term</li> <li>• Have cash outflows primarily in dollars (because Disney makes most of its movies in the U.S.), but cash inflows could have a substantial foreign currency component (because of overseas revenues)</li> <li>• Have net cash flows that are heavily driven by whether the movie is a hit, which is often difficult to predict</li> </ul>	<p>Debt should be</p> <ol style="list-style-type: none"> <li>1. Short-term</li> <li>2. Mixed currency debt, reflecting audience make-up.</li> <li>3. If possible, tied to the success of movies.</li> </ol>
Media networks	<p>Projects are likely to be</p> <ol style="list-style-type: none"> <li>1. Short-term</li> <li>2. Primarily in dollars, though foreign component is growing, especially for ESPN.</li> <li>3. Driven by advertising revenues and show success (Nielsen ratings)</li> </ol>	<p>Debt should be</p> <ol style="list-style-type: none"> <li>1. Short-term</li> <li>2. Primarily dollar debt</li> <li>3. If possible, linked to network ratings</li> </ol>
Park resorts	<p>Projects are likely to be</p> <ol style="list-style-type: none"> <li>1. Very long-term</li> <li>2. Currency will be a function of the region (rather than country) where park is located.</li> <li>3. Affected by success of studio entertainment and media networks divisions</li> </ol>	<p>Debt should be</p> <ol style="list-style-type: none"> <li>1. Long-term</li> <li>2. Mix of currencies, based on tourist makeup at the park.</li> </ol>
Consumer products	<p>Projects are likely to be short- to medium-term and linked to the success of the movie division; most of Disney's product offerings and licensing revenues are derived from their movie productions</p>	<p>Debt should be</p> <ol style="list-style-type: none"> <li>1. Medium-term</li> <li>2. Dollar debt</li> </ol>
Interactive	<p>Projects are likely to be short-term, with high growth potential and significant risk. While cash flows will initially be primarily in US dollars, the mix of currencies will shift as the business ages.</p>	<p>Debt should be short-term, convertible US dollar debt.</p>



## Application Test: Choosing your Financing Type

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- Based upon the business that your firm is in, and the typical investments that it makes, what kind of financing would you expect your firm to use in terms of
  - a. Duration (long term or short term)
  - b. Currency
  - c. Fixed or Floating rate
  - d. Straight or Convertible

## II. Project Specific Financing

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- With project specific financing, you match the financing choices to the project being funded. The benefit is that the debt is truly customized to the project.
- Project specific financing makes the most sense when you have a few large, independent projects to be financed. It becomes both impractical and costly when firms have portfolios of projects with interdependent cashflows.

# Duration of Disney Theme Park

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Year	Annual Cashflow	Terminal Value	Present Value @8.46%	Present value *t
0	-\$2,000		-\$2,000	\$0
1	-\$1,000		-\$922	-\$922
2	-\$859		-\$730	-\$1,460
3	-\$267		-\$210	-\$629
4	\$340		\$246	\$983
5	\$466		\$311	\$1,553
6	\$516		\$317	\$1,903
7	\$555		\$314	\$2,200
8	\$615		\$321	\$2,568
9	\$681		\$328	\$2,952
10	\$715	\$11,275	\$5,321	\$53,206
			\$3,296	\$62,355
				18.91893724

Duration of the Project =  $62,355/3296 = 18.92$  years

# The perfect theme park debt...

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- The perfect debt for this theme park would have a duration of roughly 19 years and be in a mix of Latin American currencies (since it is located in Brazil), reflecting where the visitors to the park are coming from.
- If possible, you would tie the interest payments on the debt to the number of visitors at the park.

# III. Firm-wide financing

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- Rather than look at individual projects, you could consider the firm to be a portfolio of projects. The firm's past history should then provide clues as to what type of debt makes the most sense.
- Operating Cash Flows
  - The question of how sensitive a firm's asset cash flows are to a variety of factors, such as interest rates, inflation, currency rates and the economy, can be directly tested by regressing changes in the operating income against changes in these variables.
  - This analysis is useful in determining the coupon/interest payment structure of the debt.
- Firm Value
  - The firm value is clearly a function of the level of operating income, but it also incorporates other factors such as expected growth & cost of capital.
  - The firm value analysis is useful in determining the overall structure of the debt, particularly maturity.

# Disney: Historical Data

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Date	Operating Income	Enterprise Value (V)	% Chg in OI	% Chg in V
2013	9450	\$126,815	6.62%	21.09%
2012	8863	\$104,729	13.91%	56.85%
2011	7781	\$66,769	15.69%	-9.19%
2010	6726	\$73,524	18.06%	22.84%
2009	5697	\$59,855	-23.06%	-18.11%
2008	\$7,404	\$73,091	8.42%	-6.27%
2007	\$6,829	\$77,980	27.53%	2.98%
2006	\$5,355	\$75,720	30.39%	27.80%
2005	\$4,107	\$59,248	1.46%	2.55%
2004	\$4,048	\$57,776	49.21%	9.53%
2003	\$2,713	\$52,747	13.80%	20.45%
2002	\$2,384	\$43,791	-15.82%	-9.01%
2001	\$2,832	\$48,128	12.16%	-45.53%
2000	\$2,525	\$88,355	-22.64%	35.67%
1999	\$3,264	\$65,125	-15.07%	-5.91%
1998	\$3,843	\$69,213	-2.59%	6.20%
1997	\$3,945	\$65,173	30.46%	18.25%
1996	\$3,024	\$55,116	33.69%	77.65%
1995	\$2,262	\$31,025	25.39%	39.75%
1994	\$1,804	\$22,200	15.64%	9.04%
1993	\$1,560	\$20,360	21.21%	6.88%
1992	\$1,287	\$19,049	28.19%	23.89%
1991	\$1,004	\$15,376	-21.99%	26.50%
1990	\$1,287	\$12,155	16.05%	-23.64%
1989	\$1,109	\$15,918	40.56%	101.93%
1988	\$789	\$7,883	11.60%	-23.91%
1987	\$707	\$10,360	53.03%	83.69%
1986	\$462	\$5,640	25.20%	61.23%
1985	\$369	\$3,498	157.99%	24.37%

# The Macroeconomic Data

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Date	Change in T.Bond rate	% Chg in GDP	% Change in CPI	% Change in US \$
2013	1.07%	1.83%	1.18%	4.89%
2012	-0.11%	2.20%	-1.03%	2.75%
2011	-1.37%	1.81%	1.48%	-4.59%
2010	-0.53%	2.39%	1.97%	-3.64%
2009	1.29%	-3.07%	-3.98%	5.79%
2008	-1.44%	-1.18%	-4.26%	10.88%
2007	-0.65%	2.93%	2.19%	-11.30%
2006	0.30%	3.40%	-1.84%	-2.28%
2005	0.16%	3.68%	0.66%	3.98%
2004	0.13%	3.72%	1.34%	-3.92%
2003	0.05%	4.32%	-0.65%	-14.59%
2002	-0.97%	2.80%	1.44%	-11.17%
2001	-0.18%	-0.04%	-2.50%	7.45%
2000	-0.98%	2.24%	0.96%	7.73%
1999	1.56%	4.70%	1.04%	1.68%
1998	-1.03%	4.51%	0.11%	-4.08%
1997	-0.63%	4.33%	-1.43%	9.40%
1996	0.80%	4.43%	0.31%	4.14%
1995	-2.09%	2.01%	-0.08%	-0.71%
1994	1.92%	4.12%	0.27%	-5.37%
1993	-0.83%	2.50%	-0.72%	0.56%
1992	-0.02%	4.15%	0.64%	6.89%
1991	-1.26%	1.09%	-2.89%	0.69%
1990	0.12%	0.65%	0.43%	-8.00%
1989	-1.11%	2.66%	0.51%	2.04%
1988	0.26%	3.66%	0.60%	1.05%
1987	1.53%	4.49%	2.54%	-12.01%
1986	-1.61%	2.83%	-2.33%	-15.26%
1985	-2.27%	4.19%	3.89%	-13.51%

# I. Sensitivity to Interest Rate Changes

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- How sensitive is the firm's value and operating income to changes in the level of interest rates?
- The answer to this question is important because it
  - ▣ it provides a measure of the duration of the firm's projects
  - ▣ it provides insight into whether the firm should be using fixed or floating rate debt.