

# Capital structure

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In finance, **capital structure** refers to the way a corporation finances its assets through some combination of equity, debt, or hybrid securities. A firm's capital structure is then the composition or 'structure' of its liabilities. For example, a firm that sells \$20 billion in equity and \$80 billion in debt is said to be 20% equity-financed and 80% debt-financed. The firm's ratio of debt to total financing, 80% in this example, is referred to as the firm's leverage. In reality, capital structure may be highly complex and include dozens of sources. Gearing Ratio is the proportion of the capital employed of the firm which come from outside of the business finance, e.g. by taking a short term loan etc.

The Modigliani-Miller theorem, proposed by Franco Modigliani and Merton Miller, forms the basis for modern thinking on capital structure, though it is generally viewed as a purely theoretical result since it assumes away many important factors in the capital structure decision. The theorem states that, in a perfect market, how a firm is financed is irrelevant to its value. This result provides the base with which to examine real world reasons why capital structure *is* relevant, that is, a company's value is affected by the capital structure it employs. Some other reasons include bankruptcy costs, agency costs, taxes, and information asymmetry. This analysis can then be extended to look at whether there is in fact an optimal capital structure: the one which maximizes the value of the firm.

## Contents

- 1 Capital structure in a perfect market
- 2 Capital structure in the real world
  - 2.1 Trade-off theory
  - 2.2 Pecking order theory
  - 2.3 Agency Costs
  - 2.4 Other
- 3 Arbitrage
- 4 See also
- 5 Further reading
- 6 References
- 7 External links

## Capital structure in a perfect market

*Main article: Modigliani-Miller theorem*

## Finance

### Financial markets

- Bond market
- Stock market (equity market)
- Foreign exchange market
- Derivatives market
- Commodity market
- Money market
- Spot market (cash market)
- Over the counter
- Real estate
- Private equity
- Financial market participants:
  - Investor and speculator
  - Institutional and retail

### Financial instruments

- Cash:
  - Deposit
  - Option (call or put) Loans
  - Security
  - Derivative
  - Stock
  - Time deposit or certificate of deposit
  - Futures contract
  - Exotic option

### Corporate finance

- Structured finance
- Capital budgeting
- Financial risk management
- Mergers and acquisitions
- Accountancy
- Financial statement
- Audit
- Credit rating agency
- Leveraged buyout
- Venture capital

### Personal finance

- Credit and debt
- Student financial aid
- Employment contract

Assume a perfect capital market (no transaction or bankruptcy costs; perfect information); firms and individuals can borrow at the same interest rate; no taxes; and investment decisions aren't affected by financing decisions. Modigliani and Miller made two findings under these conditions. Their first 'proposition' was that the value of a company is independent of its capital structure. Their second 'proposition' stated that the cost of equity for a leveraged firm is equal to the cost of equity for an unleveraged firm, plus an added premium for financial risk. That is, as leverage increases, while the burden of individual risks is shifted between different investor classes, total risk is conserved and hence no extra value created.

Their analysis was extended to include the effect of taxes and risky debt. Under a classical tax system, the tax deductibility of interest makes debt financing valuable; that is, the cost of capital decreases as the proportion of debt in the capital structure increases. The optimal structure, then would be to have virtually no equity at all.

## Capital structure in the real world

If capital structure is irrelevant in a perfect market, then imperfections which exist in the real world must be the cause of its relevance. The theories below try to address some of these imperfections, by relaxing assumptions made in the M&M model.

### Trade-off theory

*Main article: Trade-off theory of capital structure*

Trade-off theory allows the bankruptcy cost to exist. It states that there is an advantage to financing with debt (namely, the tax benefits of debt) and that there is a cost of financing with debt (the bankruptcy costs and the financial distress costs of debt). The marginal benefit of further increases in debt declines as debt increases, while the marginal cost increases, so that a firm that is optimizing its overall value will focus on this trade-off when choosing how much debt and equity to use for financing. Empirically, this theory may explain differences in D/E ratios between industries, but it doesn't explain differences within the same industry.

### Pecking order theory

*Main article: Pecking Order Theory*

Pecking Order theory tries to capture the costs of asymmetric information. It states that companies prioritize their sources of financing (from internal financing to equity) according to the law of least effort, or of least resistance, preferring to raise equity as a financing means "of last resort". Hence: internal financing is used first; when that is depleted, then debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal

Retirement

Financial planning

#### Public finance

Government spending:

Transfer payment  
(Redistribution)

Government operations

Government final consumption expenditure

Government revenue:

Taxation

Non-tax revenue

Government budget

Government debt

Surplus and deficit

deficit spending

Warrant (of payment)

#### Banks and banking

Fractional-reserve banking

Central Bank

List of banks

Deposits

Loan

Money supply

#### Financial regulation

Finance designations

Accounting scandals

#### Standards

ISO 31000

International Financial Reporting

#### Economic history

Stock market bubble

Recession

Stock market crash

History of private equity

financing when available, and debt is preferred over equity if external financing is required (equity would mean issuing shares which meant 'bringing external ownership' into the company. Thus, the form of debt a firm chooses can act as a signal of its need for external finance. The pecking order theory is popularized by Myers (1984)<sup>[1]</sup> when he argues that equity is a less preferred means to raise capital because when managers (who are assumed to know better about true condition of the firm than investors) issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance..

## Agency Costs

There are three types of agency costs which can help explain the relevance of capital structure.

- **Asset substitution effect:** As D/E increases, management has an increased incentive to undertake risky (even negative NPV) projects. This is because if the project is successful, share holders get all the upside, whereas if it is unsuccessful, debt holders get all the downside. If the projects are undertaken, there is a chance of firm value decreasing and a wealth transfer from debt holders to share holders.
- **Underinvestment problem:** If debt is risky (e.g., in a growth company), the gain from the project will accrue to debtholders rather than shareholders. Thus, management have an incentive to reject positive NPV projects, even though they have the potential to increase firm value.
- **Free cash flow:** unless free cash flow is given back to investors, management has an incentive to destroy firm value through empire building and perks etc. Increasing leverage imposes financial discipline on management.

## Other

- The neutral mutation hypothesis—firms fall into various habits of financing, which do not impact on value.
- Market timing hypothesis—capital structure is the outcome of the historical cumulative timing of the market by managers.<sup>[2]</sup>
- Accelerated investment effect—even in absence of agency costs, levered firms use to invest faster because of the existence of default risk.<sup>[3]</sup>

## Arbitrage

Similar questions are also the concern of a variety of speculator known as a capital-structure arbitrageur, see arbitrage.

A capital-structure arbitrageur seeks opportunities created by differential pricing of various instruments issued by one corporation. Consider, for example, traditional bonds and convertible bonds. The latter are bonds that are, under contracted-for conditions, convertible into shares of equity. The stock-option component of a convertible bond has a calculable value in itself. The value of the whole instrument *should* be the value of the traditional bonds *plus* the extra value of the option feature. If the spread (the difference between the convertible and the non-convertible bonds) grows excessively, then the capital-structure arbitrageur will bet that it will converge.

## See also

- Cost of capital

- Corporate finance
- Debt overhang
- Discounted cash flow
- Enterprise value
- Financial modeling
- Financial economics
- Pecking Order Theory
- Weighted average cost of capital

## Further reading

- Rosenbaum, Joshua; Pearl, Joshua (2009). *Investment Banking: Valuation, Leveraged Buyouts, and Mergers & Acquisitions*. Hoboken, NJ: John Wiley & Sons. ISBN 0-470-44220-4.

## References

- ↑ Myers, Stewart C.; Majluf, Nicholas S. (1984). "Corporate financing and investment decisions when firms have information that investors do not have". *Journal of Financial Economics* **13** (2): 187–221. doi:10.1016/0304-405X(84)90023-0 (http://dx.doi.org/10.1016%2F0304-405X%2884%2990023-0) .
- ↑ Baker, Malcolm P.; Wurgler, Jeffrey (2002). "Market Timing and Capital Structure". *Journal of Finance* **57** (1): 1–32. doi:10.1111/1540-6261.00414 (http://dx.doi.org/10.1111%2F1540-6261.00414) .
- ↑ Lyandres, Evgeny and Zhdanov, Alexei,Investment Opportunities and Bankruptcy Prediction(February 2007) Available at SSRN: http://ssrn.com/abstract=946240

## External links

- [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=778106](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=778106)
- <http://www.westga.edu/~bquest/2002/rethinking.htm>
- <http://www.listedall.com/search/label/capital%20structure>

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