Capital structure

Lecture for Corporate Finance

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SCHOOL OF BUSINESS ADMINISTRATION IN KARVINA

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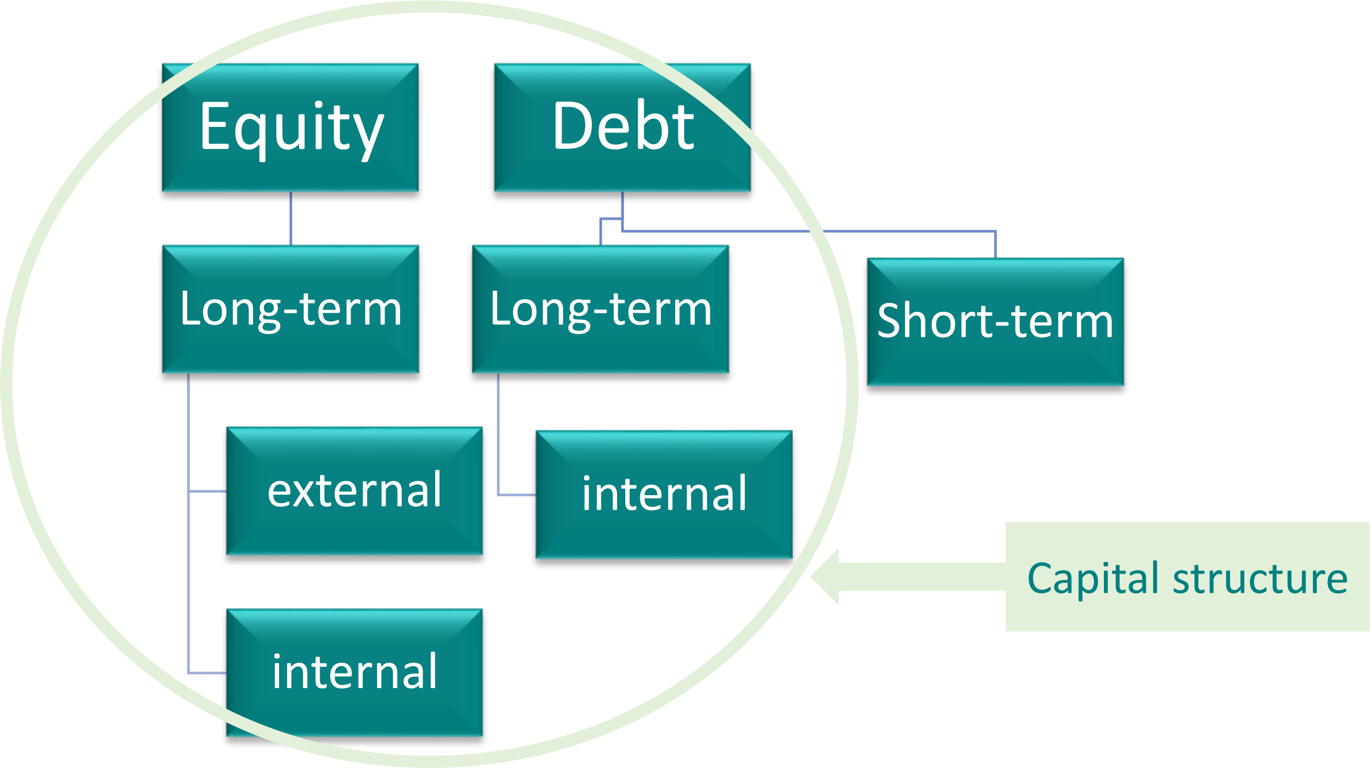
Outline of the lecture

- Definition the capital structure
- The theories of capital structure
- Classification of theories
  - Model M & M
  - Trade off theory
  - Pecking order theory
- Factors affecting capital structure in enterprises

Capital structure – definition



The optimal capital structure can be considered as a capital distribution that is associated with the minimization of the cost of capital acquisition and is in line with the development of the company's revenue, profits and structure.

Capital structure – definition

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- The capital structure is often defined as a structure of long-term capital, from which long-term assets are financed, in various sources of financial theories.

- The capital structure deals primarily with the internal structure, which is further influenced by the technical conditionality of the property structure according to the branch or field of business of the company.

- Funding rules mean the management of the interconnections of assets, sources of financing and also links between the company's equity and capital structure.

- The capital structure is essential for a company's high-quality business development and also underpins its sound financial development.

Theories of capital structure

- Theories of capital structure
  - M&M model
  - Trade off theories
    - Static trade off theories
    - Dynamical trade off theories
  - Pecking order theories
    - Theory with information asymmetry
    - The theory with conflict of interest

M&M model

The M & M model was created in 1958 and its authors are Franco Modigliani and Merton Miller (M & M). Before them, no general theory of capital structure has been formulated.

At the time, it was a theory that was based on very restrictive assumptions that were the basis for the proper functioning of the relationship between leverage and the value of the company's stocks. To date, however, this model is one of the most important theories in optimizing the capital structure.

Miller and Modigliani are based on the assertion that each enterprise has a set of expected cash flows. If an enterprise chooses for a certain level of debt financing, it must realize that the effects of business activity must be such as to not limit the effects that are being realized for the shareholders (the investors).

According to them, the leverage effect is measurable only at the enterprise level and has no effect on the market value of the business.

Miller and Modigliani Model

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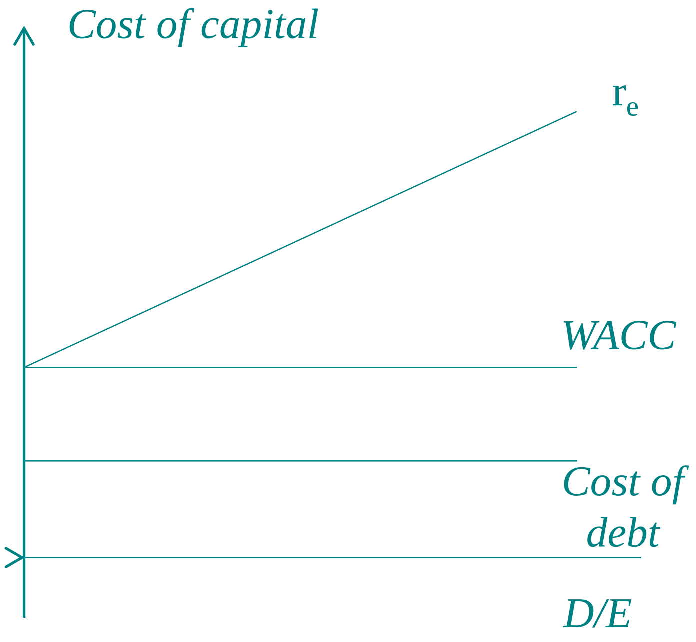
Theory		Main features	Imperfection	Main studies
Miller and Modigliani model	M&M I.	In a world without taxes, debt does not bring benefits	The unreality of the world without taxes	Miller a Modigliani (1958)
	M&M II.	With the growth of debt, the expected profit is growing. Introduction of taxation.	Unlimited debt growth. With rising debt, there is a growing risk.	Miller a Modigliani (1958)
	M&M III.	It introduces the cost of financial distress. The profitability rate must exceed the expected earnings per share rate - the investment is then acceptable	Used costs are associated with the impossibility of regulating the capital structure - absorbing the effect of the interest rate tax.	Miller a Modigliani (1963)

Miller and Modigliani Model

Version I.



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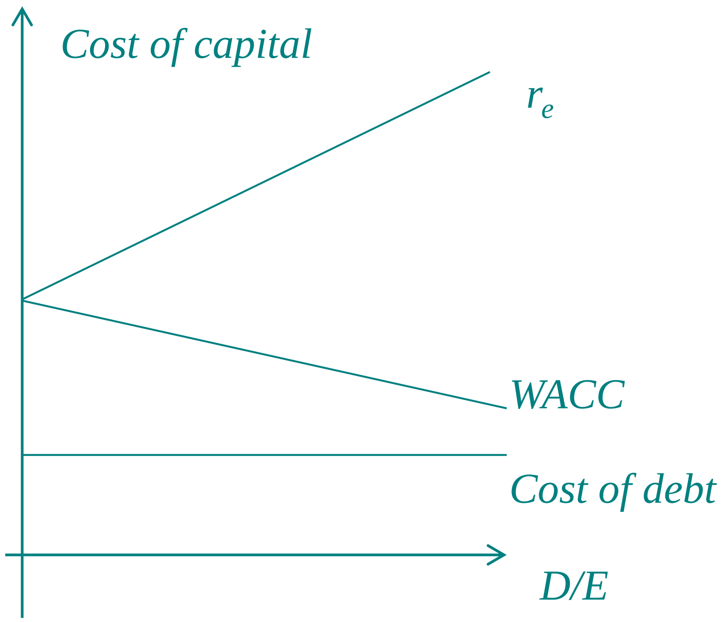

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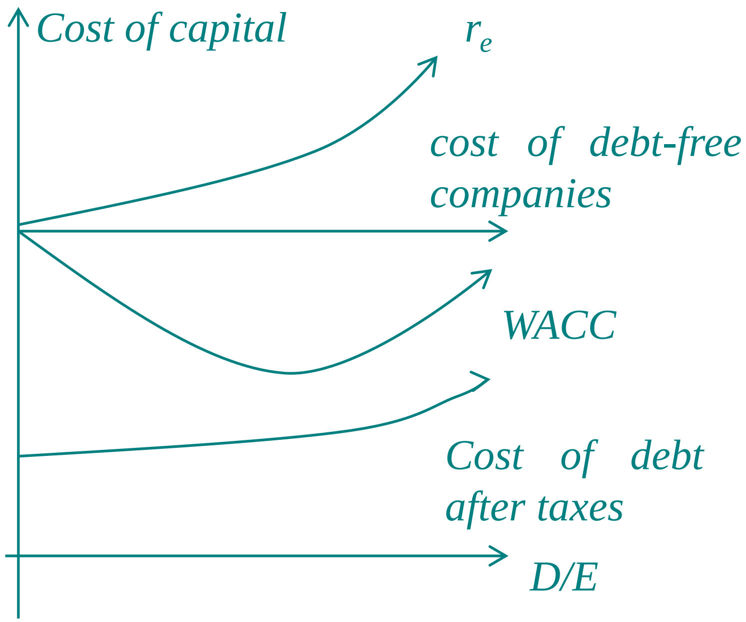

Trade off theories

Traditional view and trade off theories are a reaction to the M & M model. For the first time, indications of these theories are already in the M & M version III model (Miller and Modigliani, 1963).

They are very similar to this model, but they reject the assumption of perfection of capital markets while preserving other assumptions, and derive from it the existence of an optimal capital structure in terms of its impact on the value of the business.

Attention is focused on minimizing the average cost of capital. In essence, it is an attempt to describe the real behavior of financial managers based on empirical research.

The term trade off theory summarizes a group of theories based on the cost-benefit analysis of the leverage effect. They also often assume that the choice of sources of funding should be optimal to offset marginal costs and marginal returns.

Trade off theories

The basis for exploring these theories is that companies are continually assessing the trade-off between the costs and returns that result from the leverage effect.

The choice of source of funding is usually conditioned by offsetting the marginal cost of acquiring a foreign source of financing (these bonds are considered only bonds) and the marginal benefits of using debt financing.

They are divided into static and dynamic depending on whether the time factor enters their models.

The basic features and shortcomings of trade off theories are summarized in the following table.

Trade off theories

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Theories	Main features	Imperfections	Main studies
Static trade off theories	Compromise between interest rate, tax and cost of financial distress. Real profitability is influenced by debt control within the capital structure. It does not use dynamics.	Difficult quantifiability of debt, equity and average costs, depending on the debt ratio. Theory is tested on bonds as the only form of debt. Unreality of theory when using a bank loan.	Stiglitz (1973) Kraus a Litzeberger (1973) Hangen a Senbet (1978) Bradley et al. (1984) Myers (1984) Graham (2000, 2006)
Dynamical trade off theories	Capital Structure Optimization Using Continuous Decisions: • Tax advantage of debt versus cost of financial distress. • Investment decisions versus restructuring costs. • The optimal capital structure is replaced by an optimal range.	Difficult quantifiability of debt, equity and average costs, depending on the debt ratio.	Fisher et al. (1989) DeAngelo (2011) Strabulaev a Whited (2012)

The core of trade off theories

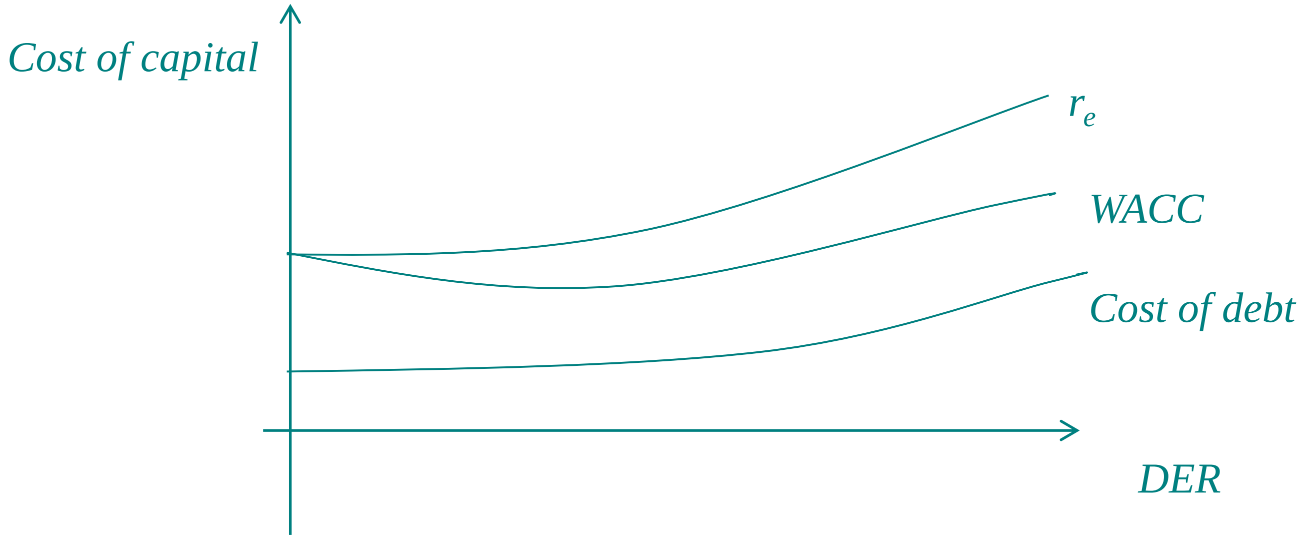
The core of the trade off theory is the discussion of four basic topics:

- **Firstly**, the target distribution of funding sources is not clearly defined. This in essence means that there is a large amount of variants in how to achieve the optima in different businesses in different forms of used funding sources.
- **Secondly**, the impact of taxes is highly problematic and is very much dependent on the conditions flowing from tax laws in the country concerned. Graham (2003) was the most prominent of this issue in the US.
- **Third**, the costs of financial distress are perceived as deadweight rather than as transfers between different forms of funding sources. In this context, many questions arise, e.g. whether it is a fixed cost, whether it grows with company size and financial problems, whether costs are disposable or permanently associated with damage to company reputation, etc. The first study on this issue is the Hangen and Senbet study (1978).
- The last major issue is **transaction costs**. It is assumed here that the adjustment of the capital structure must be gradual rather than sudden, and marginal costs are rising with increasing use of debt financing.

Static trade off theories

Traditional viewers see the link between the real profitability of ordinary shares and the share of debt capital in total company resources. It claims that the real profitability of a common stock is only slightly influenced by debt control within the capital structure.

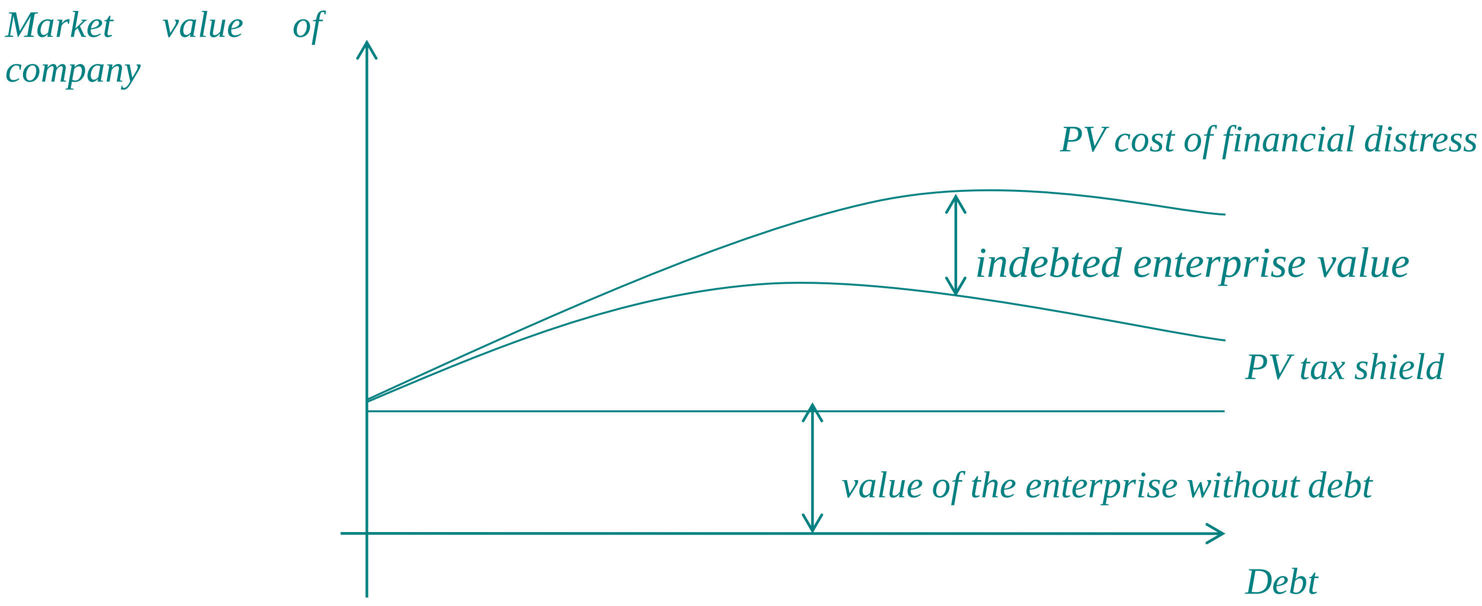
Brealey and Myers (2000) further point out that minimizing average weighted capital costs is not the same as maximizing company value.



Static trade off theories

Static trade off theory, as has been said, is based on a compromise between the interest tax shield and the cost of financial distress. It seeks to find an optimal distribution of capital when another crown of debt brings tax support that offsets the cost of deadweight. All interpretations of static trade off theories tend to be that marginal costs and marginal benefits of using the debt have to be balanced.

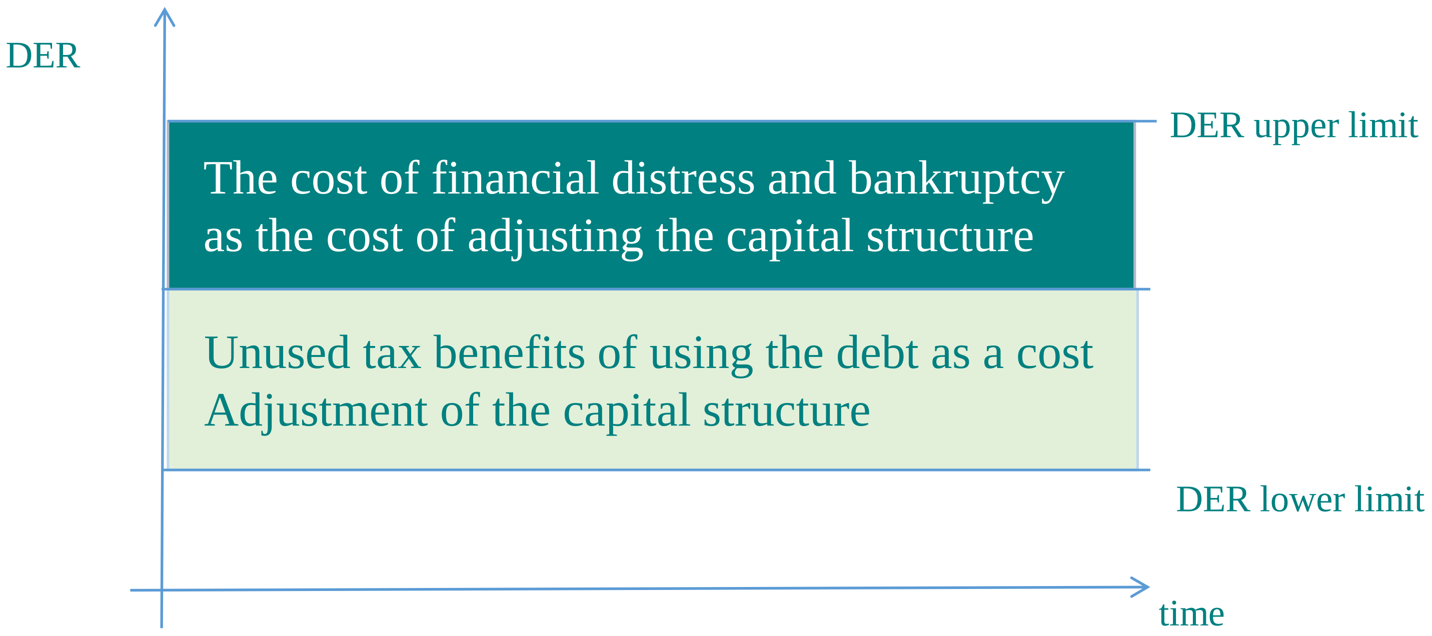
Theory works with the idea that an enterprise should borrow until the marginal value of the tax benefit of another debt is offset by an increase in the present value of the cost of financial distress. (Myers, 1984)



Dynamic trade off theories

The dynamic trade off theory is based on the fact that companies optimize their capital structure through continuous decisions not only about balancing the tax benefit of the debt and the potential cost of financial distress, but also balancing investment decisions and restructuring costs.

Fisher et al. (1989) developed a model in which, instead of optimal capital structure, they introduce an optimal range of capital structure within which the firm can move.



Pecking order theory

Pecking order theories are another group of theories. They have a common character with dynamic trade off theories, as they also work with the ability to finance themselves.
The chief representative of the theories is **Stewart Myers** with his pecking order theory, or asymmetric information theory based on empirical research by Gorgon Donaldson (1961).
The starting point of this theory is that the optimal capital structure of the company in general, and more specifically in the individual sectors, basically does not exist and that efforts to over-generalize can be very misleading. Every company is so specific that its optimization efforts can not be transferred to other companies. Each company continually optimizes its financial decisions due to the constantly changing specific conditions of its development.

Pecking order theory

Pecking order theory is based on the fact that, due to the existence of an unfavorable selection, the company primarily uses the retained earnings for its financing, then debt financing, and is then focusing on obtaining additional own sources of financing.
Myers (1984) argues that undistributed profits are better than debt, debt is better than core capital. Almost all the theories belonging to this group deal with the interpretation of the relative use of internal and external sources of financing and the preference of debt before issuing equity securities.

Pecking order theory - information asymmetry and adverse selection

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- The most profitable companies borrow the least.
- Businesses are not trying to make the best financial decisions, they are the least resistance.
- The two-way flow of capital is conditional on the existence of free cash flow.
- It is based on an incorrect valuation of equity on the basis of insufficient information.
- Information asymmetry concerns only the value of the new project, the problem of over-investment may arise. The question of the right timing.

Main studies: Myers (1977, 2001), Harris a Raviv (1991), Myers a Majluf (1984), Korajczyk et al. (1990), Frank a Goyal (2003), Taggart (1977), Baskin (1989), Allen (1993), Adediji (1998), Rashiah a Peong (2011), Jensen (1986)

Determinants of the financial structure and their relation to the use of debt sources of financing

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	Linking the use of debt sources and the relevant factor in individual theories	
	Trade off theory	Pecking order theory
Profitability	+	-
Liquidity	+	-
Fixed assets	+	-
effective tax rate	+	-
Firm‘s size	+	-
Growth of investment opportunities	-	+
Influence of banking	+	-

Determinants of the financial structure - **profitability**

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In terms of enterprise *profitability*, **the trade off theory** says that profitable businesses tend to use other foreign sources of funding because of the existence and functionality of the tax shield. If businesses are profitable, their free cash is growing under otherwise unchanged conditions, the risk of availability of funds in general is decreasing and, at the same time, the availability of debt financing on favorable terms in terms of debt costs is increasing. It also means that with the growth of profitability the probability of bankruptcy and the cost of financial distress are decreasing. This leads to the essence of the trade off theory of the positive relationship between return on equity and used debt financing.

On the other hand, **the pecking order theory** states that if there are internal sources of funding, they will be preferred because of the absence of additional transaction costs. Foreign resources will be used only in the absence of retained earnings. With increasing profitability, efforts to keep profits are increasing and excess of retained earnings leads to a lower debt value. In terms of this theory, debt is perceived rather as a signal of insufficiency in terms of profitability. As a result, a negative relationship between profitability and the growth of use of foreign funding sources is expected.

Determinants of the financial structure – **growth of investment opportunities**

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Growth of investment opportunities by **trade off theories** in significantly profitable companies will cause a fall in the volume of free cash flows. With the growth of investment opportunities, also according to the theory of compromise, there is a growing conflict between shareholders and bondholders as shareholders tend to take advantage of investment opportunities at the expense of increased risk, and by using debt sources of finance to shake that risk on the lender as well. The opportunity for investment is falling with the increase in costs of financial distress and the risk associated with an inefficient firm. This also reduces the availability of debt financing. Realized studies (eg Jung et al., 1996, Jensen 1986, Stulz 1990) predict the negative relationship between investment opportunities and the current state of debt financing.

By contrast, **the pecking order theory** assumes a positive relationship between investment opportunities and debt financing, as the need for financial resources is increasing with investment. The use of debt financing is preferred because of less disclosure of internal information.

Determinants of the financial structure – **fixed assets**

The examination of the impact of the volume of fixed assets in the ownership of enterprises on the extent of the use of foreign sources of financing is based on two fundamental aspects.

The first aspect is the stability and image of the company, which assumes that a well-established long-term tangible capital is presumed to have an established company looking after its development.

The second aspect is a guarantee. Long-term assets are perceived within the banking-oriented financial system as a guarantee for the problems that may arise during the term of the creditor's relationship.

Determinants of the financial structure – **size of firm**

Another significant determinant of the capital structure was the *size of a firm* that, in **trade off theories**, assumes that the company's size is positively linked to the leverage effect, as larger companies are considered more stable and less risky. Therefore, the acquisition of debt sources of financing by large firms may be cheaper under the same conditions than with smaller firms. In this context, fixed assets are also considered, as they can provide debt relief.

The pecking order theory is oriented in this direction to a negative correlation between the size of the company and the size of the use of foreign sources of financing. This negative correlation is due to the fact that large companies are associated with higher profitability and hence the existence of a larger number of internal sources of financing.

Factors affecting the capital structure

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Factors affecting the capital structure

Business risk
Linked to the existence of a business
Affected by competition in the industry

Corporate Tax Position
Possibility to deduct interest costs
Reducing the effective cost of capital

Financial flexibility
Availability of sources of funding
Using foreign resources not only for investments

Managerial conservatism and aggression
Manager skills, manager behavior

Factors affecting the capital structure

Business risk is associated with the company's own existence if it does not use debt financing (higher business risk means a lower debt ratio).

The corporate tax position is related to the fact that the main reason for using the debt is to deduct the interest burden from the tax base of income tax, which ultimately reduces the effective cost of foreign capital.

Financial flexibility testifies to the ability to raise capital in "reasonable" time under unfavorable conditions. The supply of capital is absolutely necessary for stable operation.

Managerial conservatism and aggression are linked to managers' ability to leverage debt capital in an effort to increase profits.

Sources:

1) ROSS, S. A., R. W. WESTERFIELD, J. JAFFE & B. D. JORDAN, 2019. Capital structure. In: Corporate Finance, Chap. 16-17, pp. 487-550. ISBN 978-1-260-09187-8.
2) BERK, J. & P. DeMARZO, 2017. Capital structure. In: Corporate Finance, PART 5, pp. 520-550. ISBN 978-1-292-16016-0.

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