

Corporate Capital Structure in Europe

The Role of Country, Industry and Firm Size

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First published 2024

ISBN: 978-1-032-85378-9 (hbk)

ISBN: 978-1-032-85381-9 (pbk)

ISBN: 978-1-003-51789-4 (ebk)

2 Capital structure determinants according to empirical findings

A literature review

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DOI: 10.4324/9781003517894-3



Routledge
Taylor & Francis Group
LONDON AND NEW YORK

2 Capital structure determinants according to empirical findings

A literature review

2.1 Tax burden as a determinant of capital structure

As outlined in Section 1.3, Modigliani and Miller (1963) initiated an investigation into the effects of the tax burden on capital structure. This line of inquiry persisted in the subsequent years, yielding outcomes that were frequently characterised by ambiguity or even outright contradiction. Miller (1977), for instance, demonstrated that despite a notable escalation in tax rates between 1930 and 1960, there was minimal alteration in the capital structure of corporations.

Within this context, Miller identified two determinants that may have discouraged the utilisation of tax savings: firstly, the relatively modest bankruptcy costs incurred by large enterprises, which imposed a comparatively insignificant burden on borrowers while causing substantial losses upon creditors; secondly, the limited advantages associated with the interest tax shield. On the one hand, they did protect the borrower from high taxation. On the other hand, the creditor's income from lending to the firm was taxed higher than any income received from equity investments, thereby discouraging corporate lending.

Furthermore, the combination of low bankruptcy expenses theoretically incentivised firms to assume greater debt. Nonetheless, the related prospect of elevated costs borne by creditors in such a scenario discouraged potential lenders from providing financial support to corporations. Ultimately, Miller's analysis led him to the conclusion that taxes exerted an insubstantial influence on capital structure.

This finding was subsequently upheld by Fama and French (1998), who obtained similar research results. Ali, Rangone and Farooq (2022) supported this perspective by affirming that the tax burden had an insignificant impact on firms' financing determinations. The authors conducted an examination of tax rates and internal factors, encompassing firm size, growth potential, asset structure, risk, profitability, non-interest-bearing tax shields and liquidity in relation to the capital structure of both U.S. and U.K. firms spanning the period 2011 to 2019. Their investigation revealed that internal factors

primarily influence corporate financing decisions, whereas the influence of corporate income taxation on capital structure was found to be statistically insignificant.

The aforementioned studies challenge the significant role of tax burdens in shaping capital structure. However, an opposing perspective prevails in the literature and has been supported by numerous studies. The research conducted by DeAngelo and Masulis (1980) examines the influence of tax burdens on both providers and recipients of capital, encompassing both internal and external sources of funding. Utilising a mathematical model, the authors established a clear relationship between capital structure and tax rates concerning a firm's income, its owners and its creditors. The cited work reveals several key findings. Firstly, firms with a limited ability to utilise the non-interest tax shield tend to maintain higher levels of debt to leverage the benefits of the interest tax shield. Secondly, a reduction in the marginal cost of bankruptcy leads to an increase in leverage. Thirdly, higher corporate income tax rates are associated with a greater propensity for equity–debt substitution. In other words, when a firm cannot attain a sufficient non-interest tax shield, it will employ debt to the extent that it maximises the advantages of the interest tax shield while considering the costs of bankruptcy.

Subsequently, several articles emerged wherein the model developed by DeAngelo and Masulis (1980) found empirical validation. Specifically, Masulis (1983) and subsequently Mikkelsen (1985) provided empirical evidence indicating that alterations in debt levels, as announced by firms, correlate with changes in the interest tax shield, thereby influencing the capital structure. Conversely, Rutterford (1985) demonstrated that firms operating under distinct tax regimes in different countries make divergent financial decisions, and correspondingly, their stock prices do not uniformly respond to identical decisions. In contrast, Han and Xu (1997) contributed to this discourse by revealing that shifts in capital structure stemming from corporate income taxation exert an impact on stock prices.

In a comprehensive analysis, Graham (1996) examined the relationship between marginal tax rates and incremental changes in capital structure across a substantial sample of U.S. firms operating during the period spanning 1980 to 1992. His findings revealed a noteworthy similarity between shifts in both categories. Specifically, firms characterised by elevated marginal tax rates also tended to exhibit a higher proportion of debt within their capital structures. Subsequently, the same author, Graham (2006), further validated these findings by illustrating that numerous firms possessed the capacity to increase their debt levels by a factor of 2 while still obtaining tax-related advantages.

In an exploration of European publicly listed firms, Cheng and Green (2008) showed that tax policy, while having a modest impact, exerted a statistically significant influence on the debt levels of the entities analysed. Higher effective tax rates were associated with an escalation in the debt holdings of the firms examined. Notably, they observed that firms with a substantial

non-interest tax shield or those featuring a high tax cap exhibited weak or negligible responsiveness to tax policy with respect to their capital structure. These findings were further supported by Overesch and Voeller (2010), who conducted an analysis of the impact of both personal and corporate taxation on the capital structure decisions of European firms.

Hanlon and Heitzman (2022) have provided confirmation of the influence of tax benefits on capital structure. Nonetheless, these authors contend that this influence is relatively weak, with a secondary role in shaping capital structure. A parallel conclusion emerges from the research conducted by Gregova *et al.* (2021). Their study, which encompassed an analysis of 10,627 firms within the Visegrad Group, demonstrated that tax rates exert a limited impact on the financial decisions of the entities examined. Simultaneously, they underscored the significance of the non-interest tax shield, highlighting its adverse effect on debt levels. Furthermore, the marginal role of the interest tax shield in shaping the capital structure of Czech and Slovak firms is underscored by Michalkova *et al.* (2021).

Fleckenstein, Longstaff and Strebulaev (2020) conducted a comprehensive analysis of the relationship between leverage and corporate tax rates by using a database comprised of all corporate tax returns submitted to the Internal Revenue Service spanning the extensive period 1926 to 2013. This extensive dataset encompassed a wealth of information pertaining to both private and publicly traded companies in the United States. The findings of their study provide evidence that alterations in debt levels are intricately linked to tax rates, a relationship that holds true for all but the smallest firms. The scope of the results encompasses a diverse array of firms, encompassing both financial and non-financial entities, employing various measures of leverage and accounting for the marginal corporate tax rate. Remarkably, their analysis reveals that a mere 1% increase in the marginal corporate tax rate corresponds to a 0.15% increase in corporate debt. In nominal terms, this translates to a \$132 billion increase in total leverage for all firms analysed.

Jędrzejczak-Gas (2018) presented noteworthy findings regarding the influence of the tax burden on capital structure. The author discerned a negative correlation between debt levels and the effective tax rate among companies within the TSL (Transport, Spedition, Logistics) sector listed on the New Connect market in Warsaw. This negative relationship likely arises from the unique characteristics of firms within the analysed sector. The companies in this sector engage in activities that necessitate substantial tangible fixed assets, enabling them to claim significant depreciation write-offs. Consequently, it can be inferred that the entities under examination derive tax savings through the non-interest tax shield, which contributes to the observed negative relationship between debt and the effective tax rate.

Numerous authors contend that tax benefits play a key role in driving firms to opt for debt over equity, especially during periods characterised by high tax rates (Frank and Goyal, 2009; Feld, Heckemeyer and Overesch, 2013; Faulkender and Smith, 2016; Deng *et al.*, 2020; Lee, Chowdhury and

Shubita, 2023). This phenomenon translates into a positive influence of the tax burden on leverage, aligning with the assumptions of substitution theory. However, it is worth noting that in certain countries, such as Belgium or Ghana, regulatory changes have been implemented to permit the deduction of taxable income based on the amount of equity. This has, in turn, led to an increase in the proportion of equity in the capital structure (Oppong-Boakye, Appiah and Afolabi, 2013; Meki, 2023). In this context, the effect of the interest tax shield on leverage takes on a negative character, as firms opt to issue equity rather than debt. The scenario described here illustrates how legal regulations can significantly influence financing decisions. This phenomenon can be effectively interpreted through the framework of the legal environment theory, as outlined in Table 2.1.

In summary, the trade-off theory posits that tax rate benefits promote a higher proportion of debt in a firm's capital structure. Nevertheless, an examination of the existing body of research implies that this influence is relatively feeble, indicating that the tax burden has limited significance as a determinant of firms' financing choices. Moreover, some studies within the literature even establish a negative correlation between the tax burden and debt. These instances can be attributed to the implementation of special regulations and can be explicated on the grounds of the legal environment theory.

Table 2.1 The impact of tax burden on leverage according to the main capital structure theories

Theory	Expected relation between tax burden and debt	Works in the literature with supporting findings
Trade-off theory	(+) The higher the income tax rate, the greater the benefit of the interest tax shield.	Frank and Goyal (2009), Feld, Heckemeyer and Overesch (2013), Faulkender and Smith (2016), Deng <i>et al.</i> (2020), Fleckenstein, Longstaff and Strebulaev (2020), Gregova <i>et al.</i> (2021), Hanlon and Heitzman (2022), Lee, Chowdhury and Shubita (2023)
Pecking order theory	The impact of the tax burden on capital structure is not taken into account in the pecking order theory or in market timing theory and in the non-tax-influenced version of trade-off theory.	Frank and Goyal (2003a), Mazur (2007)

Source: authors' elaboration

2.2 Profitability as a determinant of capital structure

Profitability stands as one of the principal determinants of capital structure, a factor frequently examined in empirical investigations, particularly within the realms of trade-off theory and the pecking order theory. Within these two theoretical frameworks, profitability exerts divergent influences on the extent of leverage.

As mentioned earlier, in accordance with the pecking order theory, companies exhibit a preference for utilising internal sources of financing (Donaldson, 1961; Myers, 1984; Myers and Majluf, 1984). The utilisation of internal sources of capital prevents the expenses associated with external equity capital issuance. This implies that the crucial factor in this scenario is the reduced cost of capital linked to internal financing. Pecking order theory likewise offers an analogous explanation for why firms prefer to issue debt rather than equity.

Companies characterised by high profitability typically exhibit lower levels of debt, a pattern in line with the pecking order theory. There are several reasons behind this phenomenon. Firstly, such firms are better equipped to fund their expansion through internal channels, particularly by using their accumulated earnings. Secondly, the inclination towards internal financing is intertwined with a desire to protect themselves from the fluctuations of capital markets (Shapiro, 1997) and a determination to maintain autonomy over the allocation of the company's resources, thereby eliminating constraints on managerial decision-making. These behaviours align with the interests of the firm's owners (Jerzemowska and Hajduk, 2015). Consequently, these entities tend to exhibit diminished requirements for debt capital (Titman and Wessels, 1988; Rajan and Zingales, 1995; Bevan and Danbolt, 2002). Furthermore, firms with large profit margins can predominantly fund their operational and developmental activities using internal resources, thereby diminishing their reliance on external capital.

However, it should be emphasised that the prerequisite for a substantial reliance on internal financing sources is the maintenance of high and stable profitability. This characteristic is typically associated with firms in the maturity phase. It is worth noting that, in line with the life-cycle theory (Weston and Brigham, 1981; Chittenden, Hall and Hutchinson, 1996) smaller and younger firms that fail to generate internal resources of significant value often encounter challenges when attempting to secure external financing. Nevertheless, as suggested by agency cost theory, these obstacles can be overcome through strategies such as collateralisation or other means to generate confidence in investors. Another option for capital acquisition for firms in their early life stages involves the incorporation of funds obtained from venture capital firms, business angels and internal resources into the capital structure as the firm progresses towards greater profitability.

Numerous studies in the literature confirm the negative impact of profitability on leverage. For instance, Jaworski and Czerwonka (2021) conducted an analysis of capital structure determinants within the energy sector across 25 EU countries, affirming the negative influence of profitability on the debt levels of the entities under investigation. Similarly, Gostkowska-Drzewicka and Majerowska (2019) analysed capital structure factors among listed firms in the Visegrad Group between 1998 and 2016, confirming a statistically significant negative effect of profitability on the leverage of the studied firms.

Likewise, Wieczorek-Kosmala, Błach and Gorzen-Mitka (2021) identified a negative relationship between long-term debt and profitability among firms in the energy sector within the Visegrad Group. In contrast, they noted a positive association between short-term debt and profitability, aligning with the assumptions of the trade-off theory.

Panda and Nanda (2020) empirically examined capital structure determinants and their long-term relationships with sectoral and macroeconomic factors affecting Indian manufacturing firms. Their analysis confirmed a statistically significant negative impact of profitability on the capital structure of the analysed firms.

Moreover, other authors have also affirmed the inverse relationship between profitability and leverage. Recent reports include studies by Satrianto *et al.* (2019), D'Amato (2021), Gomez and Herrera (2021) and Křištofík and Medzihorský (2022).

In accordance with the trade-off theory, there exists a positive association between profitability and debt leverage. This phenomenon can be explained by the fact that profitable firms tend to incur lower financial distress costs and actively seek to benefit from the interest tax shield. In essence, a profitable company is incentivised to employ more debt in its capital structure as a means to reduce its tax burden (Frank and Goyal, 2003b).

Conversely, in line with signalling theory, the choice to increase debt among profitable entities conveys a signal to investors, signifying the firm's strong financial standing. Essentially, an increase in debt, such as through the issuance of bonds, signifies that the firm anticipates sufficiently high cash flows to service the debt obligations comfortably. Consequently, as posited by the principles of signalling theory, higher profitability is indicative of a correspondingly elevated level of debt (Jerzemowska and Hajduk, 2015).

Numerous authors have conducted empirical investigations that validate the positive correlation between capital structure and profitability. For instance, Koralun-Bereźnicka (2019) conducted an analysis of Polish firms, categorising them into three distinct groups: small, medium and large, spanning various sectors of the economy. The findings of this study substantiated the existence of a positive impact of profitability on long-term debt. Conversely, the relationship between profitability and short-term debt was deemed statistically insignificant.

Slightly divergent findings were reported by Jaworski, Czerwonka and Mądra-Sawicka (2019). In their analysis of factors impacting the financial

decisions of Polish firms operating in the food sector, they observed a negative association between profitability and the total debt ratio, indicative of capital structure. Conversely, a positive relationship was identified with respect to long-term debt.

Furthermore, research conducted by Derbali (2022) introduced further discrepancies in the direction of the impact of profitability on capital structure. The author's findings diverged based on the specific profitability measure employed. Notably, return on assets exhibited a negative relationship with capital structure, while in contrast, return on equity (ROE) displayed a positive association.

Herciu and Ogorean (2017) conducted an analysis of the most profitable firms within the Fortune Global 500. Through correlation analysis, they identified a robust positive relationship between ROE and capital structure among firms in the technology, healthcare and telecommunications sectors. A comparable albeit slightly weaker correlation was observed within the entities operating in the Energy and Motor Vehicles & Parts sectors. Based on these findings, the authors posited that optimising capital structure serves as a means to maximise profitability.

Indomo and Lubis (2022) uncovered intriguing findings in their research. Their analysis focused on the capital structure determinants of Indonesian property development firms within the context of the business cycle. They demonstrated that the relationship between profitability and debt exhibits a positive correlation during economic boom periods. Conversely, during economic downturns and recessions, they identified a negative relationship between these two categories. These results highlight the dynamic nature of the relationship between profitability and debt within the property development sector and its sensitivity to economic conditions.

The positive correlation between profitability and capital structure has been supported by numerous other studies as well, including those conducted by Vaicondam and Ramakrishnan (2017), Hartwell and Malinowska (2018) and Raval and Dave (2021). Table 2.2 provides a concise summary of the literature review regarding the relationship between profitability and capital structure.

In summary, the pecking order theory assumes that profitability acts as a factor that reduces indebtedness. In contrast, trade-off theory posits that profitability serves as an incentive to increase the proportion of debt in a firm's capital structure. Based on the literature analysis, it is evident that this effect is substantial, underlining the key role of profitability in shaping firms' financing decisions.

2.3 Asset structure as a determinant of capital structure

Asset structure is most commonly defined in the literature as the proportion of fixed assets within the total assets of a firm, a concept supported by various scholars (Campbell and Jerzemowska, 2001; Mazur, 2007; Rauh and

Table 2.2 The impact of profitability on leverage according to the main capital structure theories

Theory	Expected relation between profitability and debt	Works in the literature with supporting findings
Trade-off theory	(+) Profitable firms show lower financial distress costs and seek to benefit from the interest tax shield and borrow more.	Herciu and Ogrean (2017), Vaicondam and Ramakrishnan (2017), Hartwell and Malinowska (2018), Korallun-Bereźnicka (2019), Jaworski, Czerwonka and Mądra-Sawicka (2019), Derbali (2022), Indomo and Lubis (2022), Raval and Dave (2021)
Pecking order theory	(-) Highly profitable firms tend to have low leverage as they prefer internal financing.	Gostkowska-Drzewicka and Majerowska (2019), Satrianto <i>et al.</i> (2019), Panda and Nanda (2020), D'Amato (2021), Gomez and Herrera (2021), Jaworski and Czerwonka (2021), Wieczorek-Kosmala, Błach and Gorzen-Mitka (2021), Krištofik and Medzihorský (2022)

Source: authors' elaboration

Sufi, 2010; Cortez and Susanto, 2012; Imtiaz, Mahmud and Mallik, 2016). This category holds fundamental significance for a firm due to its substantial influence on the firm's financial position. The allocation of assets, both fixed and current, has direct implications for profit opportunities and plays a crucial role in shaping the capital structure of the firm. Notably, current assets contribute directly to profit generation, whereas fixed assets contribute indirectly to this process. Consequently, it can be inferred that the composition of fixed assets within a firm's holdings fundamentally determines its production capacity. Additionally, it is worth noting that fixed assets, particularly tangible assets, can serve as collateral for the firm's liabilities.

Various capital structure theories highlight the essential role of asset structure, with particular emphasis on bankruptcy cost theory, which encompasses financial distress costs and signalling theory. The composition of a firm's assets has a substantial impact on the degree of risk creditors face in the event of the firm's bankruptcy. This is primarily attributable to the fact that assets are employed as collateral for debt, thus exerting a significant influence on a firm's capacity to secure external capital.

According to bankruptcy cost theory, firms with a higher proportion of intangible assets, such as those involving advanced technology, specialised expertise, unique market positioning, patents or goodwill, incur elevated potential bankruptcy costs when compared to firms primarily holding tangible assets. The rationale behind this assertion lies in the diminished feasibility

of converting intangible assets into cash, especially when contrasted with tangible assets. Consequently, the value erosion experienced by intangible assets during bankruptcy proceedings is more pronounced. Consequently, the financial distress costs incurred by such firms surpass those incurred by firms possessing substantial quantities of easily tradable tangible assets.

As a result of these dynamics, firms characterised by a substantial portion of intangible assets, such as, for example, pharmaceutical companies, tend to maintain lower debt ratios (Grzywacz, 2013). This strategic choice reflects a prudent response to the heightened financial distress costs associated with their asset composition, aligning their capital structure with the unique characteristics of their assets.

Signalling theory presents a contrasting perspective on this matter. In the context of signalling theory, firms with substantial intangible assets tend to carry higher levels of debt. This counterintuitive approach arises from the notion that such firms encounter challenges when attempting to signal their attractiveness to the external environment. This challenge is rooted in their limited ability to provide tangible collateral, which is perceived as a crucial element of firm stability and strength.

In essence, firms with significant intangible assets face difficulties in conveying their financial robustness and creditworthiness to potential stakeholders. This is because the absence of tangible collateral makes it challenging to offer a traditional form of assurance regarding their ability to meet financial obligations. To compensate for this, they may opt to take on more debt, signalling their confidence in their ability to generate future cash flows and repay their obligations. By leveraging their future earning potential, these firms attempt to offset the lack of tangible assets as collateral and signal their attractiveness to investors and creditors.

The relationship between tangible and current assets is subject to variation and contingent upon the specific characteristics and sector of the firm. Firms with substantial tangible assets tend to exhibit a higher degree of leverage. This trend emerges from the fact that tangible assets serve as collateral for debt, thereby mitigating the direct costs associated with bankruptcy and incentivising increased borrowing (Jensen and Meckling, 1976; Myers, 1977; Chaklader and Chawla, 2016; Jensen and Meckling, 1976; Myers, 1977; Chaklader and Chawla, 2016).

It should be emphasised that the capacity for debt issuance is intrinsically linked to the size of assets capable of serving as adequate collateral. Consequently, the proposition that leverage grows in direct proportion to the proportion of tangible assets in the firm's total balance sheet is well founded (Sogorb-Mira, 2005). As such, the relationship between asset structure and the volume of debt exhibits a positive correlation, which is consistent with the trade-off theory.

Research findings obtained from highly developed countries (Titman and Wessels, 1988; Rajan and Zingales, 1995) document the positive influence of asset structure on debt levels. A similar empirical outcome was achieved by

Ali, Rangone and Farooq (2022) through an analysis of multinational corporations operating in the U.K. and the United States between 2011 and 2019.

However, it is worth noting that Bevan and Danbolt (2002) observed that the relationship between asset structure and debt varies depending on the specific measure of leverage employed. Their research indicated that asset structure exerts a positive impact on long-term debt levels but a negative effect on short-term debt. A similar pattern was recognised in Serbian firms spanning the period 2006 to 2020, where a positive association between asset structure and long-term debt was identified (Stoiljković *et al.*, 2022).

Moreover, beyond the aforementioned studies, a multitude of other scholarly works in the literature support the positive association between asset structure and leverage. Examples include studies by Chen (2004), Chiang, Cheng and Lam (2010), Cevheroglu-Acar (2018), Thai (2018) and Vintila, Gheorghina and Toadr (2019).

In contrast to the trade-off theory, the pecking order theory posits that firms characterised by a substantial proportion of fixed assets in their asset structure are less susceptible to issues stemming from information asymmetries. Consequently, these firms exhibit a reduced inclination to resort to debt financing. In accordance with the pecking order theory, this implies that the impact of asset structure on firms' leverage is negative.

Numerous studies in the literature indeed confirm the negative relationship between asset structure and debt levels. For instance, Doan (2020) conducted an analysis of listed industrial firms in Vietnam spanning the period 2008 to 2018. Her research findings demonstrate that entities with a substantial share of fixed assets tend to exhibit lower levels of borrowing. This trend aligns with the economic context prevalent in countries where firms primarily fund their operations through short-term debt. Using such debt instruments to finance fixed assets is associated with heightened risk. Consequently, firms in these circumstances often opt for equity financing to fund their fixed asset investments. This conclusion aligns with both agency theory and the pecking order theory.

Similar conclusions were reached by Shahzad *et al.* (2021), who observed a negative relationship between long-term debt and asset structure among South Asian firms. This suggests that firms possessing significant fixed assets tend to rely less on short-term liabilities, which is consistent with the principles of the pecking order theory. Conversely, an inverse, that is positive, relationship was identified for short-term debt and asset structure, aligning with the assumptions of the trade-off theory.

The negative impact of asset structure on leverage has also been affirmed by several other studies, such as those conducted by Campbell and Jerzemowska (2001), Amidu (2007) and Li and Islam (2019). Table 2.3 provides a comprehensive list of authors whose studies have verified the influence of asset structure on debt levels.

Table 2.3 The impact of asset structure on leverage according to the main capital structure theories

Theory	Expected relation between asset structure and debt	Works in the literature with supporting findings
Trade-off theory	(+) Firms with significant physical assets are more indebted. Tangible assets serve as collateral for debts and thus allow the immediate costs of bankruptcy to be reduced, which encourages indebtedness.	Titman and Wessels (1988), Rajan and Zingales (1995), Bevan and Danbolt (2002), Chen (2004), Chiang, Cheng and Lam (2010), Cevheroglu-Acar (2018), Thai (2018), Vintila, Gheorghina and Toadr (2019), Ali, Rangone and Farooq (2022), Stoiljković <i>et al.</i> (2022)
Pecking order theory	(-) Firms with a high proportion of tangible assets in their asset structure are less prone to problems arising from information asymmetries and therefore less likely to take on debt.	Campbell and Jerzemowska (2001), Amidu (2007), Li and Islam (2019), Doan (2020), Shahzad <i>et al.</i> (2021)

Source: authors' elaboration

In summary, the pecking order theory posits that asset structure tends to increase leverage, whereas both the trade-off theory and agency theory expect that firms with substantial fixed asset holdings tend to borrow less. However, as evident from the majority of the studies discussed here, the relationship between debt and asset structure is contingent upon the maturity of the debt. In most of the cases examined, a positive association was observed between long-term debt and asset structure, indicating that firms with a significant share of fixed assets are more inclined to use long-term debt. Conversely, a negative relationship was identified for short-term debt, implying that asset structure exerts a negative effect on short-term borrowing.

These findings highlight the heterogeneity of the impact of asset structure on leverage and emphasize the importance of considering debt maturity when assessing this relationship. In essence, the influence of asset structure on a firm's leverage is context dependent and varies based on the specific characteristics of the debt instruments used.

2.4 Financial liquidity as a determinant of capital structure

Financial liquidity is a key indicator of a firm's ability to meet its short-term obligations on time. Its primary metric, the current ratio, is calculated by dividing current assets by short-term liabilities. This ratio provides a broad

overview of the extent to which a company's existing assets can cover its current obligations, offering a general perspective on financial liquidity. To provide a more detailed assessment, additional ratios such as the quick and cash ratios are often employed. The quick ratio takes into account only highly liquid current assets in its computation, including receivables from suppliers and cash and cash equivalents. In contrast, the cash liquidity ratio measures the proportion of cash to short-term liabilities and reflects the immediate cash liquidity position of the firm.

Research on the impact of liquidity on capital structure provides diverse findings. The predominant trend in this body of research affirms a negative relationship, aligning with the pecking order hypothesis. Companies adhering to this model typically prioritise the utilisation of their most liquid assets, such as accumulated cash and cash equivalents, for financing their investments. External financing becomes an option only when internal resources prove insufficient. As highlighted by Ozkan (2002), entities with higher liquidity levels may not necessitate debt issuance to sustain their operations.

Furthermore, as posited by Myers and Rajan (1998), higher liquidity may reduce an entity's ability to service debt, as it also reduces the ability of managers to commit credibly to an investment strategy that protects investors. Moreover, a large amount of liquid assets may be interpreted as a signal of mismanagement, potentially causing prospective creditors to hesitate in providing funding to such enterprises.

As mentioned, the literature contains numerous studies that affirm the negative influence of liquidity on leverage. Majerowska and Gostkowska-Drzewicka (2021) observed that liquidity had a negative impact on the capital structure of firms listed on the Warsaw Stock Exchange between 1999 and 2019. Furthermore, these research findings were consistent across both static and dynamic analyses.

In a recent study conducted by Pecina, Kristic and Sabot (2022), the authors examined the determinants of firms' financing choices in three European Union countries characterised by the highest level of economic development, as well as three countries with the lowest level of economic development. Their research encompassed a comprehensive sample of over 30,000 medium, large and very large firms hailing from Luxembourg, Ireland, Denmark, Latvia, Romania and Bulgaria. The analysis was conducted over the period spanning from 2009 to 2017. The study revealed that liquidity emerged as a factor with a statistically significant influence, not only on the overall debt levels but also on both short-term and long-term debt levels.

In their study, Garcia-Rodriguez, Romero-Merino and Santamaria-Mariscal (2021) conducted an analysis of the capital structure and determinants of debt maturity in a dataset comprising 8,721 non-profit organisations operating within the U.K. over the period 2011 to 2018. The authors demonstrated that the financial behaviours of the examined entities align with the principles of the pecking order theory. Their research revealed a negative correlation between liquidity and the levels of both long-term and short-term debt held

by these organisations. A significant portion of the studied organisations, precisely half of them, did not utilise long-term debt as a financing option. Furthermore, the study identified that larger entities with higher levels of liquidity tended to have longer debt maturities.

A substantial body of research supports the notion of a negative influence of liquidity on the size of debt. Several studies, including those conducted by Feizsohrabi and Jamshidinavid (2019), Söylemez (2019), Martucheli (2020), Nguyen *et al.* (2020) and Panova (2020), have all confirmed this relationship.

Contrastingly, the trade-off theory suggests that liquidity exerts a favourable influence on the levels of debt. Companies with higher liquidity ratios are inclined to employ debt since they possess the capability to service their obligations effectively. Robust liquidity, in turn, conveys a positive message to external investors, reinforcing the firm's financial stability and diminishing the perception of default risk. Furthermore, entities with substantial liquidity possess a surplus of assets that can be utilised as collateral for their liabilities, enhancing their credibility in the eyes of potential creditors.

In their study, Mosiejko and Bernardelli (2019) investigated the determinants of capital structure in a sample of selected companies listed on the Warsaw Stock Exchange during the period 2004 to 2018. The authors conducted an extensive analysis encompassing 18 variables, among which liquidity was represented by two ratios: current liquidity and cash liquidity. Importantly, their analysis recognised that corporate liquidity ratios are significantly contingent on the specific sector to which a firm belongs. The research findings revealed that cash liquidity exerted a positive impact on the debt-to-equity ratio of the examined firms.

Dakua's (2018) study has illustrated that Indian steel firms rely significantly on external capital, implying that these entities predominantly shape their capital structures in accordance with the principles of the trade-off theory. The author established that both profitability and liquidity have a positive impact on the leverage levels of these firms.

In the context of debt maturity, certain studies have identified a positive influence of liquidity. Jaworski and Czerwonka (2019) reported a positive effect of liquidity on long-term debt. The same authors, Czerwonka and Jaworski (2022), expanded their research to encompass a sample of 22,775 Polish and 36,625 Portuguese firms operating during the period 2010 to 2017. They reported the negative impact of financial liquidity on the total debt amount and short-term debt levels. In contrast, they found a positive correlation between financial liquidity and long-term debt. Remarkably, these patterns were consistent across Portuguese firms as well. Additionally, the relatively lower indebtedness of Polish firms was associated with improved profitability and the maintenance of an optimal level of financial liquidity, a relationship that was not observed in the case of Portuguese firms.

Furthermore, the positive influence of liquidity on leverage has been demonstrated in other studies, such as those conducted by Jędrzejczak-Gas (2014) and Ramli, Hengky and Grace (2019).

Liquidity is also represented by the difference between current assets and current liabilities, a metric commonly referred to as working capital. This measure holds a similar conceptual significance as the current liquidity ratio. A positive working capital signifies a favourable liquidity position for the firm, indicating that it has sufficient resources to meet its short-term obligations. Conversely, negative working capital indicates a deficiency in the working capital required to cover short-term liabilities, thereby signalling potential difficulties in meeting payment obligations.

Regrettably, the literature is relatively scarce when it comes to studies exploring the influence of working capital on capital structure. In a recent investigation by Riaz, Jinghong and Siddiqi (2023), the financing decisions of 519 textile firms from G-20 countries over the period spanning from 2007 to 2018 were analysed. The authors presented evidence indicating that working capital exerts a statistically significant negative effect on debt levels. This observed relationship aligns with the pecking order theory.

Hill, Kelly and Highfield (2010) demonstrated that firms with better access to capital markets and possessing greater internal resources tend to maintain higher levels of working capital. Additionally, Loukil (2022) highlights the significance of working capital as a critical factor impacting the association between capital structure and corporate performance. Loukil underlines that an excessive amount of working capital can reduce the advantages of internal resources, potentially leading to a deterioration in corporate performance.

Flannery and Öztekin (2021) have conducted research demonstrating that working capital plays a crucial role in shaping the levels of leverage within a firm. This category also exerts a considerable influence on a company's credit rating and the volume of debt securities it issues. Specifically, a higher level of working capital tends to enhance the value of debt securities issued, particularly in the case of long-term debt. Conversely, firms can use short-term liabilities as a substitute for short-term debt securities, thereby reducing their overall leverage.

Moreover, changes in the various components that constitute the level of working capital also have consequences for the maturity of debt issued by a firm. An increase in receivables, for instance, tends to result in a greater issuance of long-term debt. Conversely, a reduction in liabilities contributes to an increase in the allocation of short-term securities.

The complex relationship between working capital and leverage is further explored in the last section of this chapter, specifically in Section 2.8. Table 2.4 summarises the directional impact of liquidity on leverage in accordance with the expectations of both the trade-off theory and the pecking order theory. Additionally, it highlights research findings that support these relationships.

In summary, the pecking order theory suggests that liquidity tends to result in reduced debt usage, while the trade-off theory suggests that liquidity increases the proportion of debt in a firm's capital structure. Nevertheless, empirical evidence from available research often indicates a negative relationship between liquidity and capital structure.

Table 2.4 The impact of financial liquidity on leverage according to the main capital structure theories

Theory	Expected relation between liquidity and debt	Works in the literature with supporting findings
Trade-off theory	(+) Firms with a high liquidity ratio are typically more willing to utilise debt as a financing option because they demonstrate strong repayment capacity.	Jędrzejczak-Gas (2014), Dakua (2018), Mosiejko and Bernardelli (2019), Jaworski and Czerwonka (2019), Ramli, Hengky and Grace (2019), Czerwonka and Jaworski (2022)
Pecking order theory	(-) Firms with high liquidity use accumulated cash and cash equivalents first and therefore borrow less.	Feizsohrabi and Jamshidinaid (2019), Söylemez (2019), Martucheli (2020), Nguyen <i>et al.</i> (2020), Panova (2020), Majerowska and Gostkowska-Drzewicka (2021), Garcia-Rodriguez, Romero-Merino and Santamaria-Mariscal (2021), Pecina, Kristic and Sabot (2022)

Source: authors' elaboration

2.5 Firm growth as a determinant of capital structure

The concepts of firm growth and development are frequently used interchangeably in the context of capital formation. However, it is important to distinguish between these terms. While the categories of growth and development of a firm share similarities, it is essential to recognise that development primarily pertains to the qualitative aspects of a firm's performance. In contrast, growth is associated with quantitative characteristics. Therefore, when referring to growth, one should consider metrics such as market value, global profits in a given year, earnings per share, sales value and firm size (Goold, 1999; Wierzbic, 2011).

Indeed, the term 'development' is generally more ambiguous than growth when describing a firm's progress. It predominantly pertains to qualitative aspects that are often challenging to quantify and measure in the context of a firm's activities.

In accordance with Pierścionek's (2010) description, business unit development is characterised as a purposeful, effective and synchronised process within a firm, involving the implementation of changes in its systems. This process encompasses the introduction of new elements, enhancements to existing elements, business expansion and adaptation to a changing environment, all with the ultimate aim of achieving sustainable competitive advantage. Based on this definition, it can be inferred that a firm's growth represents a manifestation of its development. Consequently, growth is considered a subset or narrower category within the broader concept of development.

The literature presents various measures to assess a firm's growth potential, reflecting the diversity of approaches in this regard. These measures include the following:

- the ratio of intangible assets to total assets (Stoiljković *et al.*, 2022),
- the absolute value of investment expenditure (Huang and Ritter, 2009),
- the ratio of investment expenditure to total assets (Campbell and Jerzemowska, 2001),
- an indicator of the dynamics of the return on operating assets (Kędzior, 2012),
- change in sales revenue relative to total assets (Eça and Albanez, 2022),
- the percentage change in sales revenue concerning the previous year (Gostkowska-Drzewicka and Majerowska, 2018),
- percentage change in total assets (Jaworski and Czerwonka, 2017).

In accordance with the trade-off theory, firms with substantial growth potential characterised by numerous intangible assets tend to borrow less compared to firms possessing a substantial share of tangible assets that can be employed as collateral for debt repayment. This pattern arises because tangible assets significantly reduce the direct costs associated with bankruptcy, thereby incentivising greater debt usage. This observation aligns with the trade-off theory and is consistent with the influence of asset structure on leverage, as discussed in Section 2.3.

Myers (2001) emphasises that high future growth opportunities can be regarded as a form of intangible assets. However, they cannot serve as collateral for debt repayment because their utilisation depends on future investment decisions. Consequently, the realisation of growth opportunities is often associated with higher risk and anticipated costs of financial distress, which tends to deter firms from accumulating more debt.

Importantly, fast-growing firms typically incur higher bankruptcy costs than their counterparts, resulting in relatively greater losses in value. Thus, according to the trade-off theory, there exists a negative relationship between growth opportunities and financial leverage.

Several studies have indeed provided empirical evidence supporting the negative relationship between growth potential and capital structure, in line with the tenets of the trade-off theory. For example, Karpavicius and Yu (2019) analysed how growth opportunities tied to external factors, such as increased demand for a firm's product supply, influence capital structure decisions. The model developed by Karpavicius and Yu assumes that the optimal leverage ratio of a firm decreases with higher growth opportunities, as long as the manager is not significantly risk-averse. Conversely, when managers exhibit a significant degree of risk aversion, the use of debt increases. This dynamic is closely tied to variations in equity value. Empirical research has demonstrated that firms with substantial growth opportunities

tend to maintain lower debt ratios when their equity value is high. Furthermore, these firms are often managed by individuals with a higher propensity for risk-taking. The explanation presented by Karpavicius and Yu offers an alternative perspective to the conventional argument positing a negative relationship between growth opportunities and leverage, shedding light on the complicated interplay between growth potential, risk aversion and capital structure decisions.

Vijayakumaran and Vijayakumaran (2019) conducted a study that revealed a statistically significant negative impact of growth opportunities on the total debt levels of 7,860 non-financial Chinese public firms listed between 2003 and 2010. This negative effect was found to be less pronounced when a firm's debt structure included a higher proportion of short-term liabilities. Additionally, their research indicated a positive relationship between short-term debt and growth opportunities. Furthermore, the negative association between growth opportunities and capital structure has been documented by numerous other studies, including those conducted by Nguyen *et al.* (2020), Krištofik and Medzihorský (2022) and Lerner and Flach (2022).

The pecking order theory assumes a positive relationship between growth opportunities and debt levels. Myers (1984) established that firms tend to favour internal financing over external sources due to information asymmetry between managers and investors, as well as the need to reduce information costs in the capital structure formation process. Consequently, firms with substantial growth potential and a greater demand for funds typically prioritise debt financing to support risky investments once internal funds have been exhausted, resorting to external equity issuance only as a last resort.

Indeed, several studies in the literature support the idea that a firm's growth opportunities have a positive influence on the amount of debt, aligning with the principles of the pecking order theory. For instance, Zulvia and Linda (2019), who studied industrial firms listed on the Indonesia Stock Exchange between 2010 and 2016, provided empirical evidence showing that growth opportunities play a significant role in shaping a firm's capital structure. Their research revealed a statistically significant positive impact of growth opportunities on the amount of debt for the entities examined.

Similarly, Nguyen and Tran (2020) arrived at analogous conclusions. Their study, focused on public construction firms listed on the Hanoi Stock Exchange from 2012 to 2019, demonstrated that growth opportunities have a positive effect on the debt size of these firms.

Numerous other studies in the literature have identified a positive relationship between a firm's capital structure and its growth opportunities. This positive association has been confirmed by research conducted by various scholars, including Feizsohrabi and Jamshidinavid (2019), Mardones and Cuneo (2020), Garcia-Rodriguez, Romero-Merino and Santamaria-Mariscal (2021) and Czerwonka and Jaworski (2022).

It is important to acknowledge that high growth opportunities often result in an increase in the market-to-book value ratio. This observation is consistent with market theory and tends to favour the utilisation of external sources of capital, such as equity issuance, over external debt capital. This reflects the rationale that firms with promising growth prospects may find it more advantageous to raise funds through equity issues, as the market values their potential for future growth and is willing to provide capital accordingly. This preference aligns with the market theory and can influence a firm's financing decisions in favour of equity financing when growth opportunities are substantial (Duliniec, 2015).

When examining the financial decisions of firms in the context of growth opportunities, it is crucial to consider the inclination of firm managers to maintain financial flexibility, often referred to as financial slack. Financial slack signifies that a company possesses readily available sources of finance that can be accessed promptly when needed. These sources of financial slack typically encompass accumulated surplus cash or cash equivalents held in the form of short-term financial assets, as well as unused debt capacity while maintaining the existing credit rating. In such a scenario, the firm maintains a debt ratio below what is considered optimal for its circumstances.

This financial slack allows the firm to retain flexible resources that can be used to finance emerging growth opportunities, such as new investment projects requiring rapid decision-making and immediate access to funding. This concept aligns with the work of Graham and Harvey (2001) and underlines the importance of maintaining financial flexibility to seize and capitalise on timely growth prospects.

Table 2.5 summarises the impact of growth opportunities on leverage within the frameworks of both the trade-off theory and the pecking order theory. Additionally, it identifies examples of studies that provide empirical evidence supporting these relationships.

In summary, according to the pecking order theory, growth opportunities tend to result in an increase in debt levels. Conversely, according to the trade-off theory, growth opportunities are associated with a decrease in the proportion of debt in a firm's capital structure. However, certain studies suggest that this effect may be weakened when a firm's debt structure includes a higher proportion of short-term liabilities. In such cases, there may be a positive relationship between short-term debt and growth opportunities, reflecting a more complex interaction between these variables.

2.6 Risk as a determinant of capital structure

All business enterprises are exposed to risks due to the inherent uncertainty in estimating the value and timing of future cash flows resulting from investment decisions. These cash flows may manifest as significantly higher than anticipated or result in substantial losses. Consequently, businesses operate within inevitably uncertain environments that simultaneously offer

Table 2.5 The impact of growth opportunities on leverage according to the main capital structure theories

Theory	Expected relationship between growth and debt	Works in the literature with supporting findings
Trade-off theory	(-) The realisation of growth opportunities usually involves high risk and an increase in the expected cost of financial difficulties, which affects debt limitation.	Karpavicius and Yu (2019), Vijayakumaran and Vijayakumaran (2019), Nguyen <i>et al.</i> (2020), Kristofík and Medzihorský (2022), Lerner and Flach (2022)
Pecking order theory	(+) Significant growth opportunities lead to an increase in information asymmetry and thus to an increase in risk. As a result, the cost of capital raised by issuing shares increases. Therefore, firms with significant growth potential decide to raise debt when internal funds are exhausted.	Feizsohrabi and Jamshidinaid (2019), Zulvia and Linda (2019), Mardones and Cuneo (2020), Nguyen and Tran (2020), Garcia-Rodriguez, Romero-Merino and Santamaria-Mariscal (2021), Czerwonka and Jaworski (2022)

Source: authors' elaboration

opportunities and pose threats (Duliniec, 1998). Depending on the unique attributes of the business in question, various sources of risk, encompassing systematic and specific risks, can be discerned. However, the most significant risk, particularly in the context of internal capital structure factors, emanates from the firm's operational, investment and financial activities.

The total risk associated with a firm's operations can be decomposed into two distinct components. The first component is operational risk, also known as commercial risk. Operational risk depends on the nature of the firm's activities and is related to the specifics of operating in a given industry. The second component is financial risk, which has its origins in the firm's capital structure.

Operational risk pertains to the uncertainty associated with the future value of a firm's operating cash flows, encompassing both operating income and operating expenses. The assessment of operational risk entails an examination of the fluctuations in the operating profit triggered by specific business conditions. This assessment primarily focuses on factors unrelated to the financing of the firm's operations. It is noteworthy that distinct sectors of the economy exhibit varying operational characteristics, including the variability of operating earnings, usually referred to as EBIT, and the composition of assets. Consequently, specific connections exist between these operational categories and the firm's capital structure (Ross, Westerfield and Jordan, 1999).

Financial risk, as previously stated, depends on the financing approach adopted by a firm and thus results from the composition of the entity's capital structure. Financial risk constitutes the second category of risk, alongside operational risk, that stakeholders in a business assume when interest-bearing external funds are incorporated into the capital structure. Consequently, a firm lacking obligations incurring financial costs remains free of financial risk. Financial risk is associated with the uncertainty concerning future earnings within a firm that relies on debt capital. This uncertainty can be quantified in terms of the variability observed in net profit or net earnings per share.

Incorporating debt into a firm's capital structure can create benefits, specifically the realisation of positive leverage and tax savings. Nevertheless, it is crucial to acknowledge that extending a firm's indebtedness also increases the potential for bankruptcy and the expenses associated with financial distress. This stems from the fact that taking on debt entails a fixed financial obligation in the form of interest payments and the repayment of borrowed capital within a specified timeframe. The discontinuation of these payments serves as an indicator of insolvency and can result in bankruptcy proceedings. Consequently, the greater the proportion of debt within a firm's capital structure, the more pronounced the financial risk becomes.

Consequently, the greater the financial risk, the greater the overall risk of the firm's operations. This linkage arises from the convergence of financial risk with operational risk. Firms operating within industries characterised by substantial fixed costs, such as hotel enterprises, must be extremely cautious when considering debt acquisition. The rationale behind this caution is twofold: firstly, an increase in debt levels could increase the aggregate risk profile of such firms to a point where it becomes unacceptable to potential investors, resulting in a reluctance to commit capital due to heightened bankruptcy risk. Secondly, higher risk may increase financing costs to the point where raising additional capital becomes unsustainable for the firm.

Conversely, entities with low operational risk have more scope for taking on additional financial risk. As a result, they have a greater degree of flexibility in shaping their capital structure.

However, it is important to take into account the feedback loop that can occur between financial and operational risk. In fact, it is likely that an increase in financial risk and the resulting threat of bankruptcy may lead to an increase in operational risk. The prospect of encountering payment difficulties can undermine the firm's standing in the market under such circumstances. This, in turn, may engender higher risk pertaining to future operating cash flows. This phenomenon unfolds in two principal ways. Firstly, a compromised financial position and diminished credibility may result in the erosion of customers and a resulting reduction in sales volumes. Secondly, within such a context, a possible scenario also encompasses changes in the terms of trade with suppliers, particularly the deterioration of payment conditions for material deliveries, thereby increasing operating costs.

A significant proportion of debt in the capital structure can lead to risky investment decisions by firm management. In the event of failure, the creditors bear the consequences of such ventures. Contrastingly, in the case of success, the owners benefit from the additional income (Shapiro and Titman, 1994).

Measuring the impact of overall risk related to a firm's operations and changes in its capital structure on the variability of net cash flows generated by the firm can be accomplished through the use of the capital asset pricing model (Ross, Westerfield and Jaffe, 1996). Net operating cash flows are allocated to both the firm's creditors and its owners. Consequently, the uncertainty regarding the evolution of these cash flows is consequently transferred to the stakeholders within both groups and the distribution of this risk depends on the capital structure. In this context, a metric for assessing the volatility of operating cash flows is the β_a coefficient, also known as the asset beta, which defines the risk associated with investments in the firm's assets, specifically, operational risk.

Shareholders' exposure to risk stemming from equity investments is quantified by the coefficient β_e (equity beta). Conversely, β_d (debt capital beta) measures the risk borne by creditors resulting from investments in the firm's debt securities. Consequently, the risk arising from investments in the firm's assets is distributed between owners and creditors in accordance with the capital structure. If a firm's operations are exclusively financed through equity, owners assume the entire operational risk. Conversely, with an increased level of debt, shareholders bear a higher risk, as mentioned previously, encompassing both operational and financial risks. In contrast, creditors face a significantly lower level of risk. This is primarily because the financial payments (interest) to bondholders are typically secured and are only marginally affected by short-term fluctuations in operating profit. Concerns primarily arise when the firm experiences prolonged illiquidity. Nevertheless, even in the event of bankruptcy, creditors' claims are prioritised and settled using the firm's assets before those of the owners.

It is worth noting that the cost of financial distress refers primarily to the costs incurred by a firm with liquidity problems and is therefore related to the asset structure. Therefore, the firm's priority is to ensure liquidity to minimise the risk of bankruptcy. Models for firms to conduct asset financing strategies are helpful in this case, but attention should be paid to the risks involved in their use. Alternative strategies in this area are presented in Table 2.6.

Both the trade-off theory and the pecking order theory forecast that risk negatively impacts the capital structure of a firm. The trade-off theory posits that high-risk firms should avoid excessive borrowing. This caution arises from two key considerations. Firstly, high cash flow volatility increases the probability of bankruptcy. Secondly, the potential bankruptcy risk associated with high earnings volatility leads risk-averse managers to avoid taking on additional debt. Consequently, risk negatively affects the target level of leverage, as expounded by Bradley, Jarrell and Kim (1984).

Table 2.6 Asset financing strategies versus risk

<i>Type of strategy</i>	<i>Sources of asset financing</i>	<i>Strategy implementation and risk</i>
Conservative strategy (safe)	Fixed assets and most inventories are financed by fixed capital, that is equity or long-term debt. Financing from long-term sources is more expensive than using short-term funds. Therefore, applying this strategy leads to an increase in financing costs while ensuring liquidity.	It ensures that financial and liquidity risks are minimised.
Moderate strategy (harmonious, balanced)	This balanced strategy postulates that the fixed portion of current assets should be financed with fixed capital and the variable portion with current liabilities.	The application of this strategy leads to an optimisation of the relationship between the financial risks incurred and the profit achieved.
Aggressive strategy (dynamic)	The objective of implementing this strategy is to maximise the return on equity. Higher returns can be achieved by reducing the cost of financing assets. Therefore, this strategy assumes that fixed assets are financed by fixed capital. Current liabilities should cover current assets.	An aggressive strategy involves a high financial and liquidity risk.

Source: authors' elaboration based on: Grzywacz (2012)

From the pecking order theory perspective, the negative impact of risk on capital structure is explained somewhat differently. This theory posits that firms characterised by high volatility in operating profits tend to accumulate cash reserves during prosperous periods. Consequently, these firms lean towards refraining from borrowing funds, instead relying on the internal resources accumulated during prior years to survive challenging times (Mazur, 2007). Castanias (1983) utilises the tax-shelter bankruptcy model to document a negative correlation between risk and debt. Moreover, (Stoiljković *et al.*, 2022) have empirically verified a statistically significant inverse relationship between risk and total debt, encompassing both long- and short-term debt, within Serbian industrial firms during the period spanning from 2006 to 2020. Numerous other studies in the literature also report the negative association between capital structure and risk. For instance, Drobetz and Fix (2005), Lemmon, Roberts and Zender (2008), Baum, Stephan and Talavera

(2009), Psillaki and Daskalakis (2009), Schwert and Strebulaev (2014), Dakua (2018) and Nguyen *et al.* (2022) have demonstrated the negative effect of income volatility on debt, as illustrated in Table 2.7, which outlines the direction of risk's influence on leverage in selected capital structure theories.

In spite of the prevalent evidence supporting the negative impact of risk on debt levels, the literature also provides examples that contradict this relationship. Ali, Rangone and Farooq (2022), for instance, demonstrated a robust and statistically significant influence of the variable 'risk' on leverage levels, as indicated by both the total debt ratio and the short- and long-term debt, particularly in multinational firms. This outcome was attributed to the ability of multinational corporations to mitigate risk effectively through various measures. These measures include international diversification of their portfolios, sourcing debt internationally and employing transfer pricing strategies. Furthermore, multinational firms often exhibit a willingness to assume greater risks in exchange for the prospect of enhanced returns via increased debt financing. Additionally, increasing agency costs can incentivise firms with greater risks to transfer them to lenders, implying a positive relationship between leverage and risk.

In their study, Jaworski and Czerwonka (2021) investigated the determinants of capital structure in European Union energy companies. They find that the level of indebtedness in these firms is negatively related to the financial risk of the sector. Interestingly, they observe that the proportion of debt in the capital structure of the analysed firms increases alongside the sectoral financial risk, which is a specific feature of the energy industry. This unexpected relationship can be attributed to the interventionist policies enacted by both the EU and its member states, particularly concerning the regulation of energy prices. These policies have a considerable impact on the financial performance of energy companies. However, the authors notice the need for further research of this issue.

Table 2.7 The impact of risk on leverage according to the main capital structure theories

Theory	Expected relation between risk and debt	Works in the literature with supporting findings
Trade-off theory	(-) Given the increased costs of financial distress and the likelihood of bankruptcy, high-risk firms should not become excessively indebted.	Castanias (1983), Drobetz and Fix (2005), Mazur (2007) Lemmon, Roberts and Zender (2008), Baum, Stephan and Talavera (2009), Psillaki and Daskalakis (2009), Schwert and Strebulaev (2014), Dakua (2018), Nguyen <i>et al.</i> (2022), Stoiljković <i>et al.</i> (2022)
Pecking order theory	(-) Firms with highly volatile operating profits must first use accumulated internal financial resources and only then take on debt.	

Source: authors' elaboration

In summary, both the pecking order theory and the trade-off theory anticipate a negative influence of risk on a firm's debt levels. Nevertheless, the literature does contain exceptions that contradict such a relationship. These exceptions are characterised by a positive correlation between risk and debt and they typically attributed to the unique activities or regulatory environment specific to certain groups of firms.

2.7 Depreciation as a determinant of capital structure

Contemporary tax systems commonly afford businesses the opportunity to benefit from various forms of preferential treatment when utilising debt capital. This is facilitated by the deductibility of interest payments on debt, as well as other legally recognised deductions from the tax base. These deductions encompass tax depreciation, carry-over deductions for tax losses, various development incentives, deductions for research and development expenditures and similar provisions. All these categories constitute what is referred to as non-debt tax shields (NDTS).

The utilisation of interest-based tax shields by a company, and thus the increase of the debt component within its capital structure, depends on the efficacy of employing these tax shields. This effectiveness primarily pertains to the firm's profitability. Next, it may prove more advantageous for the firm to utilise tax shields derived from sources other than interest expenses. Consequently, the presence of tax shields beyond interest charges may impose limitations on debt financing. In essence, non-interest tax shields can serve as substitutes for interest-based tax shields. This phenomenon is particularly pronounced in firms where the opportunities to utilise tax deductions are nearing exhaustion, as highlighted by Leszczyłowska (2018).

Both the NDTS and the interest protection and loss compensation schemes affect firms' financing decisions by determining their individual marginal tax rates (Bernasconi, Marenzi and Pagani, 2005). This impact becomes particularly apparent in firms characterised by moderate profitability, as the realisation of substantial benefits from tax shields necessitates a sufficiently high level of revenue, as pointed out by Konieczny (2007). The implications of these mechanisms may be relatively inconsequential for firms with very high profitability, a point marked by MacKie-Mason (1990). MacKie-Mason's research reported that the effects of NDTS depend on a firm's profitability and, most critically, its proximity to exhausting its tax deduction capacity, a concept referred to as 'tax exhaustion'. Tax exhaustion occurs when taxable income approaches zero, leading to a partial or complete loss of the opportunity to benefit from tax protection mechanisms. Furthermore, the study provided partial confirmation that the loss relief tax shield can act as a substitute for the interest tax shield.

Subsequent studies by Trezevant (1992) and Dhaliwal, Trezevant and Wang (1992), among others, further validated the hypothesis of a substitution

effect and a depletion effect on the benefits of deductions, particularly under U.S. economic conditions.

In their study, Bernasconi, Marenzi and Pagani (2005) analysed the impact of changes to corporate income tax regulations in Italy implemented during the latter half of the 1990s, aimed at incentivising equity financing. Their analysis established that all the non-interest tax shields they examined generated a substitution effect concerning tax shields.

Graham and Tucker (2006) conducted an analysis of the utilisation of non-interest tax shields by U.S. firms. By using data derived from tax audits and financial statements, the authors validated that the incorporation of a non-interest tax shield leads to a reduction in debt levels. These findings were supported by Overesch and Voeller (2010), who conducted a study employing panel data sourced from European firms. In their research, they identified a negative association between non-interest-bearing tax shields and a firm's reliance on debt. In essence, this implies that higher taxes related to non-interest-bearing tax shields serve to displace interest rate considerations and, consequently, reduce debt financing. It is worth mentioning that both non-interest-bearing and interest-bearing tax shields, as outlined in Section 2.1, have been considered as influential factors in capital structure decisions in numerous studies conducted across various countries.

As previously noted, the tax shield effect is one of the rationales behind the increase of debt in firms. Nonetheless, this approach is attractive primarily for companies that generate revenues capable of generating tax advantages while not incurring other costs of a similar nature. In terms of capital structure, such costs mainly involve depreciation, which influences the extent of what is termed the 'investment tax shield' relative to total assets. Unlike the tax shield, depreciation serves to decrease debt, as established by DeAngelo and Masulis (1980). This pattern aligns with both the trade-off theory and the pecking order theory.

As previously indicated, a non-debt tax shield can substitute for the interest tax shield, resulting in a negative relationship with the debt ratio, in line with substitution theory. Consequently, firms that secure financing through depreciation will need less debt. Therefore, within entities that possess access to internal financing, the association between the non-interest tax shield and the debt ratio is also negative, aligning with the principles of the pecking order theory.

Conversely, agency theory can explain the positive impact of the non-interest tax shield on the debt ratio. Increasing depreciation implies an increase in the free cash flow available to managers. In such a scenario, the simplest approach for managers to reduce unwarranted cash utilisation is by increasing debt.

Numerous studies have confirmed the impact of non-interest tax shields on the size of a firm's debt. Gregova *et al.* (2021) analysed the impact of the tax shield and earnings management on firms' capital structure in Visegrad Four

(V4) countries. Their study covered 10,627 firms operating in the V4 countries between 2014 and 2017. The findings suggest that the capital structure decisions of the studied firms align with the pecking order theory. Short-term trade credit emerged as the most commonly utilised form of liability. The tax shield exhibited limited relevance for debt-related decisions, whereas the non-interest tax shields were reported to have a statistically significant negative effect on leverage.

Kovacova, Krajcik and Blazek (2022) obtained similar results regarding the impact of interest-free tax shields on firms' capital structure in the Visegrad countries.

Clemente-Almendros and Sogorb-Mira (2016) explored the importance of tax burdens in shaping the capital structure of publicly listed Spanish firms during the period 2007 to 2013. Their research revealed a statistically significant effect of taxation on debt levels. However, in the firms studied, the non-interest tax shield acted as an alternative to the interest shield, confirming the existence of a substitution effect between the two categories. Furthermore, the relationship between debt and taxation was more pronounced in the group of less leveraged entities compared to other firms.

Szomko (2020), on the basis of a sample of 426 firms listed on the Warsaw Stock Exchange spanning from 2002 to 2015, demonstrated that the interest-free tax shield had a statistically significant negative impact on both long-term and short-term debts. Nevertheless, the effect was more substantial for long-term debt.

Many other authors have likewise confirmed the negative impact of the tax shield. For instance, studies by Prędkiewicz and Prędkiewicz (2015), Pathak and Chandani (2021), Poornima and Kumar (2022), Mota and Moreira (2017) and Öhman and Yazdanfar (2017) have all provided empirical evidence supporting the negative influence of the tax shield on a firm's capital structure.

Jaworski and Czerwonka (2019) have identified a positive impact of the interest-free tax shield on capital structure, a pattern consistent with agency theory. Additionally, the authors highlighted that, unlike several studies conducted in other countries that validate the significant influence of the non-interest tax shield and other internal factors on the long-term debt ratio, no similar relationship was observed in Poland. This discrepancy can be attributed to the significant role of short-term debt in financing Polish firms.

Campbell and Jerzemowska (2001) similarly confirmed the positive impact of the non-interest tax shield on Polish firms. A similar conclusion was drawn by Moradi and Paulet (2019), who found a positive relationship between debt and the non-interest tax shield across six European countries from 1999 to 2015. Numerous other works in the literature have reached matching conclusions, including studies by Ersoy (2022), Saif-Alyousfi *et al.* (2020) and Söylemez (2019). Table 2.8 outlines the relationship between the non-interest tax shield and debt for the selected capital structure theories.

Table 2.8 The impact of the non-interest tax shield on leverage according to the main capital structure theories

Theory	Expected relation between non-debt tax shield and debt	Works in the literature with supporting findings
Trade-off theory	(-) The non-interest tax shield can replace the interest tax shield, resulting in a negative relationship with the debt level.	Prędkiewicz and Prędkiewicz (2015), Clemente-Almendros and Sogorb-Mira (2016), Mota and Moreira (2017), Öhman and Yazdanfar (2017), Szomko (2020), Gregova <i>et al.</i> (2021), Pathak and Chandani (2021), Kovacova, Krajcik and Blazek (2022), Poornima and Kumar (2022)
Pecking order theory	(-) Firms that raise funds through depreciation need less debt because they can better raise internal finance.	

Source: authors' elaboration

In summary, both the trade-off theory and the pecking order theory propose that the relationship between the non-interest tax shield and capital structure is negative. It should be noted that the utilisation of a non-interest tax shield offers an alternative, serving as a substitute for the interest tax shield, ultimately resulting in a reduction in debt levels.

2.8 Working capital as a determinant of capital structure

Working capital (WC) is an important financial aspect of any business. While capital structure refers to the way a company finances its operations and growth, and is determined by the mix of debt and equity used to fund the business, working capital refers to the current assets and liabilities a company has to meet its short-term obligations.

Working capital is a crucial element of any company's financial structure as it represents the funds that are readily available to meet the operational expenses of the organisation. It can be defined as the difference between a company's current assets and its current liabilities. Alternatively, it represents the difference between a company's long-term capital, that is, the equity, and long-term debt and fixed assets. In simpler terms, it represents the funds that are readily available to meet the operational expenses of the organisation. WC is a critical metric for companies as it indicates their ability to manage their cash flow effectively and maintain liquidity. A positive WC indicates that a company has sufficient current assets to cover its current liabilities, while a negative WC suggests that a company may face financial difficulties in meeting its short-term obligations. As such, WC plays a crucial role in a

company's financial decision-making, including determining its optimal capital structure, managing cash flows and assessing its overall financial health.

While there has been extensive research on the factors that determine corporate capital structure, the relative scarcity of empirical research on working capital as a determinant of capital structure is noteworthy. One reason for the limited research on working capital as a factor affecting leverage is the complexity involved in measuring and defining working capital. Unlike other factors such as leverage or profitability, working capital is not a single metric but rather a combination of various components, including inventory, accounts receivable, cash and accounts payable. This makes it challenging to isolate the effects of working capital on capital structure from other factors. Another reason for the lower popularity of working capital as a leverage determinant among researchers might be the perception that it is a less significant determinant of capital structure than other factors such as asset structure, profitability or growth opportunities.

Nevertheless, the level of working capital a company has can have a significant impact on its capital structure decisions. Companies with strong working capital positions, that is companies with sufficient cash and current assets to meet their current liabilities, are more likely to have a flexible capital structure. They can raise funds through both debt and equity financing without being concerned about the immediate implications for their liquidity (Groppelli and Nikbakht, 2006).

On the other hand, companies with weak working capital positions may be forced to rely on debt financing to meet their short-term obligations. This can result in a higher debt-to-equity ratio, which can impact their long-term financial health (Horne, Wachowicz and Bhaduri, 2021). Therefore, working capital is an important determinant of a company's capital structure decisions, as it influences the level of risk and flexibility in its financing strategy. A company with strong working capital can afford to have a more balanced mix of debt and equity, while a company with weak working capital may need to prioritise debt financing to maintain liquidity (Gitman, Juchau and Flanagan, 2021).

According to the trade-off theory, there is a positive relationship between working capital and debt (Myers, 1984). The trade-off theory suggests that firms have an optimal capital structure that balances the benefits and costs of debt financing. The benefits of debt financing include the tax deductibility of interest payments and the ability to increase financial leverage, which can lead to higher returns for shareholders. The costs of debt financing include the risk of financial distress, which can lead to bankruptcy costs and agency costs arising from conflicts of interest between debt holders and equity holders (Modigliani and Miller, 1958).

In the context of working capital management, the trade-off theory suggests that firms may increase their debt financing in order to fund their working capital needs. For example, firms may use short-term debt such as bank loans or commercial papers to finance their accounts receivable and

inventory, which can improve their liquidity position and allow them to take advantage of profitable investment opportunities (Keown *et al.*, 2022).

However, there is a limit to how much debt a firm can take on before the costs of debt begin to outweigh the benefits. As a result, the trade-off theory suggests that firms should aim to maintain an optimal level of debt that balances the benefits and costs of debt financing (Graham and Harvey, 2001). This optimal level of debt will depend on various factors such as the firm's profitability, asset structure and market conditions, among others.

There are several literature items that support the positive relationship between capital structure and working capital as a capital structure determinant. For instance, Van Horne and Wachowicz (2008) note that firms with higher levels of working capital may be able to take on more debt because they have more assets that can be used as collateral.

A study by Baños-Caballero, García-Teruel and Martínez-Solano (2012) examines the relationship between working capital management, corporate performance and financial constraints of Spanish firms. The findings show that the optimal level of working capital is lower for firms more likely to be financially constrained.

More recently, Flannery and Öztekin (2019) in their study of U.S. firms find support for the relevance of working capital items as reliable determinants of capital structure. The authors conclude that the working capital components, such as receivable and payable accounts, have causal effects on a firm's financial leverage. Specifically, the pledgeability, liquidity and reversibility of receivables, inventories and net working capital allow firms to issue more financial debt, especially long-term debt. Conversely, the increase in payables, which substitute for short-term debt, results in lower financial leverage. Interestingly, the authors also find that working capital measures affect the maturity of issued debt: an increase in receivables results in an increase in long-term debt issuances, whereas a decrease in payable accounts leads to issuing more short-term debt. Overall, their key findings confirm the significant effects of accounts receivable and accounts payable on corporate financial decisions, which seem to reflect a broader relationship between operating and financial policy.

The pecking order theory predicts an inverse relationship between working capital and debt, as firms tend to use less external financing (i.e. debt) when they have more internal funds (i.e. working capital) (Myers, 1984). Therefore, before utilising debt financing, firms would typically aim to optimise their working capital management in order to improve their liquidity position, by for example improving inventory management, optimising payment terms with suppliers, or shortening collection periods from customers (DeLoof, 2003).

Therefore, in the pecking order theory, as firms increase their debt financing, they would aim to optimise their working capital management in order to improve their liquidity position and reduce their reliance on external financing sources. Conversely, when firms decrease their debt financing, they

may find it easier to maintain a higher level of working capital, since they have more internal funds to utilise (Deloof, 2003).

Empirical findings supporting the inverse relation between working capital and debt are not uncommon. For example, the aforementioned study by Deloof (2003) analysed the relationship between working capital management and capital structure in Belgian firms. The author finds that companies with better working capital management practices tend to have lower levels of debt financing and higher levels of equity financing. The study also suggests that firms tend to adjust their working capital management practices in response to changes in their financing structure.

Sudarsanam and Lai (2001) examined the impact of working capital management on capital structure decisions of U.K. firms. They found that companies with strong working capital positions tend to use less debt financing and have lower leverage ratios. It is worth mentioning, however, that while the authors' study does not directly address the relationship between capital structure and working capital, it does examine the impact of financial distress on restructuring decisions, which can be related to the need for working capital financing.

A summary of the theoretical predictions on the relation between working capital and debt can be found in Table 2.9.

These studies provide evidence that working capital management plays an important role in determining a company's capital structure decisions. However, it is worth noting that the relationship between working capital and capital structure can be complex and can depend on various factors such as industry, size, growth prospects and other company-specific characteristics.

Table 2.9 Relation between working capital and leverage according to the main capital structure theories

Theory	Expected relation between WC and debt	Works in the literature with supporting findings
Trade-off theory	(+) Firms may increase their debt financing in order to fund their working capital needs.	Keown <i>et al.</i> (2022), Flannery and Öztekin (2019)
Pecking order theory	(-) Firms aim to optimise their working capital management in order to improve their liquidity position and reduce their reliance on external financing sources.	Sudarsanam and Lai (2001), Deloof (2003), Afza and Nazir (2008), Horne, Wachowicz and Bhaduri (2021), Gitman, Juchau and Flanagan (2021)

Source: authors' own compilation

2.9 Contemporary considerations in capital structure

As mentioned in previous sections, the financial decisions of companies are influenced by a variety of factors. The empirical part of this study considers selected determinants of a classical nature. However, in practice, there are considerably more factors of critical importance in shaping the capital structure, such as the company's ownership structure or its financial flexibility. Furthermore, this section discusses the role of debt covenants – agreements included in lending arrangements to protect creditors – which become increasingly important in corporate finance strategies. Moreover, due to changes occurring in the corporate environment, the conditions stemming from technological progress and digital transformation, as well as ESG (environmental, social, governance) requirements (Jones-Kowalska, 2016; Zieliński, 2023), are gaining increasingly vital, if not principal, significance.

The implementation of sustainable development principles and achieving the status of a socially responsible company is currently a key issue for enterprises in all aspects of their operation. One of the tools intended to enable companies to act sustainably while achieving not only economic but also ethical, social and environmental goals is the ESG concept. The literature emphasises that transitioning from a traditional to a socially responsible mode of operation, as well as a high ESG rating, impacts a company's demand for financial resources and the conditions for acquiring them. Consequently, such changes affect the indebtedness of these companies. It is assumed that obtaining an ESG rating reduces the level of financial leverage and information asymmetry, particularly through actions in the employee domain (Verwijmeren and Derwall, 2010; Bae, Kang and Wang, 2011). Conversely, high environmental risk leads to an increase in financial leverage (Sharfman and Fernando, 2008). Moreover, companies with a higher risk of ESG reputation loss rely more on bond issuance than on bank loans (Newton *et al.*, 2023).

Obtaining an ESG rating serves a signalling role and facilitates the redistribution of financing sources. Thus, a substitution effect occurs, moving from bond issuance to bank loans, which in turn lowers the cost of capital (El Ghouli *et al.*, 2011; Ng and Rezaee, 2015). This effect is stronger the higher the financial pressure on the company, the lesser the growth opportunities and the more specialised and narrowly applicable the assets are (Asimakopoulos, Asimakopoulos and Li, 2023). The substitution effect is associated with avoiding the excessive burden of bond issuance (debt-overhang) and the fact that adhering to ESG principles improves the company's image and provides valuable information to potential lenders. As a result, these companies have better access to bank loans and can limit bond issuance. This approach is consistent with the pecking order theory, as both obtaining bank loans and issuing bonds can be seen as more attractive sources of financing than equity issuance. However, in the case of bank loans, the information asymmetry between the company and the financier is smaller because banks have

their own information monitoring systems. Furthermore, companies investing in ESG activities are less burdened by financial costs than entities not adhering to sustainable development principles (Goss and Roberts, 2011). Research by Cheng, Ioannou and Serafeim (2014) indicates that companies performing better in the ESG area face fewer capital constraints due to mitigated agency conflicts and reduced information asymmetry. However, other studies draw opposite conclusions. For example, Menz (2010) points out that socially responsible companies incur higher capital costs associated with bond issuance.

European enterprises aim to combine responsible business, effective resource management and high financial performance, contributing to a more sustainable and resilient business environment. Globally, over a third of the estimated \$140.5 trillion in capital expenditures to be made by 2025 on corporate assets will be invested in assets related to ESG activities, with European companies accounting for half of these expenditures (Hamrouni, Uyar and Boussaada, 2020). According to research by Khan *et al.* (2024), in Europe, a segment of investors, known as sustainable investors, seeks shares of socially responsible companies. These investors may exhibit somewhat irrational behaviours, as their main criterion is the company's sustainability profile rather than its financial performance. This leads to an overvaluation of shares of socially responsible companies, affecting the capital structure. Overvaluation creates opportunities for raising financial resources in the capital market. Although European companies act in accordance with the pecking order theory, the revaluation caused by ESG influences financial leverage. It turns out that socially responsible companies issue equity when their shares are overvalued, which is consistent with the market timing theory (Baker and Wurgler, 2002).

The global economy is currently in the phase of digital transformation, a process characterised by the continuous adoption of new digital technologies, such as mobile technology, social media, cloud technology, artificial intelligence, blockchain, the Internet of Things and big data analytics, to create value in enterprises (Warner and Wäger, 2019). Digital transformation has thus altered the operational dynamics of all organisations across all their activities. In the financial domain, financial technologies (FinTech) play a significant role, revolutionising the traditional financial sector globally and significantly impacting the capital structure of companies. The term 'FinTech' refers to technological financial innovations that have a significant impact on markets and financial institutions and can generate new business models, services and products (Yang, Sui and Qi, 2021).

FinTechs can reduce information asymmetry between companies and capital providers, making financial services better tailored to the real needs and capabilities of enterprises. The application of these technologies has improved the quality and simultaneously shortened the verification procedures of potential borrowers. This enables companies to accurately identify clients with good creditworthiness and influence the shortening of the

receivables collection cycle, thereby strengthening their potential to generate internal funds (Luo *et al.*, 2022). Moreover, FinTechs, similar to crowdfunding, offer new opportunities for capital acquisition (Block *et al.*, 2021).

The transformations in the financial sector due to FinTechs may alleviate the problem of excessive corporate indebtedness. The expansion of financial services availability, reduction in information asymmetry and enhanced efficiency of financial institutions associated with the use of financial technologies open new possibilities for capital acquisition. FinTechs facilitate the digital transformation of capital markets (Langevin, 2019), thereby increasing the liquidity of corporate shares. Moreover, investment banks or insurance companies can collect and process unconventional company data (e.g. regarding the company's image, audio and video files) using digital technologies. This can lead to a significant reduction in transaction costs resulting from information asymmetry. Thus, in line with the transaction cost theory (Robins, 1987), as the availability of equity increases and its cost decreases, companies may be inclined to reduce their financial leverage. This thesis is supported by empirical research by (Lai *et al.*, 2023), who, using data from Chinese listed companies between 2007 and 2020, observed a negative relationship between excessive debt levels and FinTechs. These technologies also reduce financial constraints and increase share liquidity. Furthermore, it was observed that the impact of FinTechs on the capital structure of the analysed companies was stronger in the case of private entities.

Besides mitigating the problem of excessive indebtedness, FinTechs accelerate the adjustment of financial leverage to the optimal level. This process can occur in three ways.

Firstly, digital transformation reduces information asymmetry between investors and company managers, positively affecting the speed of capital structure adjustment. FinTechs enrich information sources and decrease the costs of gathering information by investors (Chen *et al.*, 2022).

Secondly, digital technologies improve the transparency of business processes. This reduces the possibilities for opportunistic behaviour by managers through strengthening the internal control mechanisms of shareholders over the management (Goldfarb and Tucker, 2019). Moreover, digital transformation facilitates monitoring of the company by external stakeholders, such as financial analysts or media. Therefore, digital transformation can accelerate the adjustment of the capital structure through improving corporate governance and reducing agency costs.

Thirdly, utilising FinTechs signals positive development prospects for the company. This can reduce their financial constraints and, simultaneously, increase their creditworthiness, possibilities of obtaining government grants and capital market support (Liu and Wang, 2023).

Furthermore, digital transformation can continuously provide new information necessary for decision-making that enables the reduction of operational and financial risk, leading to lower financing costs (Li *et al.*, 2022). These theses have been confirmed in studies by Niu *et al.* (2023) and Y. Chen

et al. (2023), who proved that digital transformation has a positive impact on the speed of dynamic adjustment of the capital structure of Chinese listed companies.

Another factor playing a crucial role in shaping corporate capital structure is financial flexibility, as it enables businesses to adapt to changes and grasp opportunities as they emerge in financial markets. Financial flexibility is often overlooked in capital structure research. However, as CFOs of companies suggest, this factor plays a crucial role in making financial decisions (Childs, Mauer and Ott, 2005; Rapp, Schmid and Urban, 2014). Financial flexibility is defined as a company's ability to access financing and restructure it at low costs (Gamba and Triantis, 2008).

Defined in this way, financial flexibility is crucial for companies in two areas. Firstly, financial flexibility can mitigate underinvestment problems when access to capital is limited. Secondly, it can help avoid costs associated with financial distress. The value of financial flexibility is difficult to observe and measure directly, as it results from decisions made in previous years. Therefore, despite its significant importance, this factor is rarely encountered in empirical research. Most available analyses focus mainly on indicators of financial constraints, which indirectly inform about financial flexibility (Chen and Chen, 2012).

Companies can maintain or restore their financial flexibility through two solutions: firstly, by making financial decisions that increase their credit potential; secondly, improving financial flexibility is possible by entering into outsourcing agreements and the funds thus freed can be used to finance high-return investments (Choi *et al.*, 2021). Companies capable of increasing their financial flexibility are better prepared for the risk arising from economic instability and cyclical changes. Empirical research results have shown a significant difference in the dynamic adjustment of the debt ratio in response to changes in the size of key determinants of capital structure between companies with high and low financial flexibility in shock conditions. The debt ratio of flexible companies positively responded to changes in asset structure and company size and negatively to changes in factors such as growth opportunities, non-interest tax shields and profitability (Panda *et al.*, 2023).

Companies whose shareholders value financial flexibility above other factors are characterised by lower financial leverage ratios. These entities also maintain lower dividend pay-outs and often opt for share buybacks to further improve financial flexibility. This is confirmed by research by Bonaimé, Hankins and Jordan (2016), which found that to improve financial flexibility, companies prefer to incur the costs associated with share repurchases rather than pay sticky dividends, which in practice means periodically depleting internal fund resources.

Both the substitution and the pecking order theories provide foundations for linking financial decisions and financial flexibility. According to the substitution theory, managers aiming to improve financial flexibility should

balance the costs and benefits of adjusting the level of financial leverage in response to asset value fluctuations. As shown by Singh and Hodder (2000), financial flexibility is a key determinant of optimal capital structure in multinational firms. Moreover, this category can act as both a substitute and a complement to financial leverage. The substitution effect arises from the ability to shift income to countries with lower taxes, which can significantly mitigate the impact of valuation differences in tax rates between countries. In this aspect, financial flexibility is especially useful when a firm aims for relatively low financial leverage. Conversely, the complementary effect results from financial flexibility leading to a reduction in the risk of default and lost tax savings for leveraged firms.

According to the pecking order theory, firms prefer internal financing sources, then low-risk debt, subsequently more risky debt sources and finally consider equity issuance. This theory implies that debt is not a natural source of financing but a choice made out of necessity, that is after internal financing has been exhausted. Financial flexibility can be maintained at an appropriate level when companies adhere to the sequence of financing source choices consistent with the pecking order theory. However, even in such situations, companies must consider economic volatility, a fundamental factor determining the availability of various financing sources. Maintaining adequate financial flexibility mitigates problems arising from information asymmetry and reduces the risk of financial distress, allowing firms to benefit from emerging capital acquisition opportunities. Companies that strive to use debt sparingly, thus maintaining a high level of further borrowing capacity to finance future investments, also preserve financial flexibility after these investments have been realised. Therefore, financial flexibility is a key factor enabling investment decisions at a higher level of efficiency (Graham, 2000; Hegde, Panda and Masuna, 2023). Byon (2021) emphasises that firms increasing financial flexibility maintain low financial leverage by issuing shares to raise cash. Conversely, firms utilising financial flexibility increase debt and use financial reserves to realise investments. Then, they repay this debt and enhance their income using the internal funds generated by these investments.

Denis and McKeon (2016) proved that aiming for a target capital structure is not a primary priority for companies because this choice is made with the preservation of the ability to finance potential future investment opportunities in mind. This means that managers view unused borrowing capacity as a source of financial flexibility. Thus, financial flexibility may be a key factor linking capital structure theories with financing patterns of firms observed in practice.

Debt covenants emerge as another contemporary determinant of capital structure decisions, playing a considerable role in shaping corporate financing strategies. These contractual provisions, designed to protect the interests of lenders, impose constraints and obligations on borrowers, influencing their leverage choices and investment decisions. While traditional metrics like the debt-to-equity ratio offer basic and direct reflection of a company's

indebtedness, the incorporation of additional measures provides a more comprehensive evaluation of its financial health and risk profile.

In their study, Chava *et al.* (2019) review the recent theoretical and empirical literature on debt covenants with a particular focus on how creditor governance after covenant violations can influence the borrower's corporate policies. Additionally, Denis and Wang (2014) provide insight into the renegotiation process of debt covenants and its implications for creditor control rights. They find that creditors have strong control rights over the borrower's operating and financial policies.

It is worth noting that debt covenants can be viewed as both a determinant of capital structure and an alternative measure of it, depending on the context in which they are considered. On the one hand, debt covenants can directly influence a firm's capital structure decisions by imposing restrictions or requirements on the amount and type of debt a company can take on. For example, strict debt covenants that limit the level of leverage a firm can maintain may drive it towards a more conservative capital structure with lower debt levels relative to equity. In this sense, debt covenants shape the capital structure by affecting the mix of debt and equity financing chosen by the firm.

On the other hand, debt covenants also serve as indicators or measures of a firm's capital structure quality and risk profile. Lenders often use covenant terms as a means to assess the borrower's financial health and ability to meet debt obligations. Therefore, the strictness or leniency of debt covenants can be an indication of the level of financial risk associated with a firm's capital structure. In this regard, debt covenants complement traditional metrics such as debt-to-equity ratios by offering a more detailed understanding of the firm's indebtedness and its capacity to manage debt effectively.

Moreover, as in the study by Billett *et al.* (2007), debt covenants can also be viewed as a dependent variable, along with leverage and debt maturity, which are affected by conventional capital structure determinants, such as growth opportunities. Authors document that the negative relation between leverage and growth opportunities is significantly reduced by covenant protection, suggesting that covenants can mitigate the agency costs of debt for high growth firms.

Overall, debt covenants play a multiple role in the area of capital structure, acting both as determinants that shape financing decisions and as alternative measures that reflect the financial health and risk profile of the firm.

In the literature, significant emphasis is placed on the impact of a company's ownership structure on its financial decisions. The way a company is owned and governed significantly influences its financial decisions, including strategies for managing debt and equity, which in turn affects its capital structure.

For European firms, this issue must be analysed within the context of the specific features of their institutional and legal environment. This environment significantly differs between European Union countries and the rest of the world. The institutional structure in Europe affects the functioning of corporate

governance in European companies. The characteristic low level of investor protection in Continental Europe, coupled with weak legal enforcement, enhances the importance of internal governance attributes, such as ownership structure (La Rosa, Bernini and Verona, 2020). It is important to note that, economically, EU countries form a relatively homogeneous group, yet they are culturally diverse. This explains the varying levels of ownership concentration characteristic of individual countries (Sacristán-Navarro *et al.*, 2022).

In addition to weak protection of minority investors and poor legal enforcement, Continental European countries are characterised by underdeveloped capital markets and a high corporate debt ratio (Aguilera and Jackson, 2003), which generates specific agency mechanisms in publicly traded companies. Furthermore, firms in various European countries exhibit different approaches to equity issuance as a source of raising equity capital. In terms of stock market development, the U.K. closely resembles the United States. Meanwhile, in Spain, Italy, Germany and France, legal solutions facilitate the use of debt. The Netherlands and Scandinavian countries occupy a middle position between these two extremes. Moreover, Continental European countries significantly differ from Anglo-Saxon countries in terms of corporate governance solutions. This leads to a higher concentration of ownership, which facilitates the principal-agent control (Type I agency conflict) and leads to opportunistic behaviours by owners and managers to the detriment of minority investors (Type II agency conflict) (Claessens *et al.*, 2002; Bennedsen and Nielsen, 2010). Secondly, in Anglo-Saxon countries, portfolio investors and large firms are mainly interested in stock investments. In contrast, in Continental Europe, the ownership structure of companies is dominated by family investors, institutional investors and the government (Faccio and Lang, 2002). Therefore, such companies may pursue goals other than maximising shareholder value (Thomsen and Pedersen, 2000) and prefer specific sources of financing.

Family firms, due to their unique form of ownership concentration (Wang and Shailer, 2017) and the concept of socio-emotional wealth (Gómez-Mejía *et al.*, 2007), significantly differ from other entities. They are characterised by a considerable aversion to risk, strong control mechanisms and strong reputation considerations. The decisions of these entities are influenced not only by economic goals but also, uniquely, by non-economic objectives. In family firms, agency costs are usually lower than in non-family firms, especially when family members hold managerial positions. This situation ensures alignment of interests between management and owners. As a result, family firms are less prone to agency conflicts than other entities (Saidat, Silva and Seaman, 2019). Additionally, owners have a strong motivation to monitor company actions due to the high value of their stakes in the company. This also applies in cases where owners do not actively participate in management. Lower agency costs lead to a lesser need for debt capital. Therefore, debt ratios in family firms are relatively lower than in non-family firms (Grossman and Hart, 1980). Moreover, a strong aversion to risk associated with the loss of

socio-emotional wealth, in extreme cases, leads to a complete avoidance of debt, thus zero financial leverage (Strebulaev and Yang, 2013).

Financing patterns in family firms may also be shaped by the aforementioned agency conflict between majority and minority shareholders. In situations where a dominant part of the shares is held by the family, and its members serve as CEOs, there may be a preference for private interests at the expense of minority shareholders (Shleifer and Vishny, 1977). In such concentrated power conditions, family members have exclusive rights to determine the strategic directions of the company's development and are reluctant to relinquish control over the company. In this situation, taking on debt may be a preferred financing instrument for investments, as it does not lead to capital dilution and thus allows maintaining control over the company.

State-owned enterprises play an important role in European countries that underwent economic transformation in the 1990s. Often, state-owned companies on the brink of bankruptcy receive government support. In such cases, it is very likely that state-controlled banks will willingly finance such entities despite their losses. Unfortunately, such actions negatively impact the motivation of the management team of the state-owned enterprise and lead to further financial difficulties (Zhu, 2012). Moreover, state control leads to minimised information transparency, as former government officials are often appointed to key managerial positions and primarily care about their own interests, not the shareholders' or the company's well-being (Grosman, Okhmatovskiy and Wright, 2016). Ownership concentration is a significant factor in the capital structure of state-owned enterprises. From the perspective of agency theory, conflicts between shareholders and managers in these entities often lead to irrational decisions, resulting in inefficient operations (T. Nguyen *et al.*, 2020).

The presence of an institutional owner within the ownership structure of state-owned enterprises significantly influences the level of debt these entities carry. Institutional ownership contributes to enhanced managerial oversight, which, in turn, aligns managers' priorities more closely with those of the shareholders, rather than their personal interests. Moreover, when an institutional owner possesses a substantial portion of the company's shares, this stakeholder is in a position to more effectively monitor managerial practices and deter actions that could be detrimental to the firm (Le and Tannous, 2016). This arrangement promotes a governance structure that not only prioritises shareholder value but also ensures a more prudent approach to financial management, potentially leading to more sustainable debt levels. Recent research (Wang and Luo, 2024) shows that this effect is stronger in state-owned enterprises than in private ones. Institutional investors contribute to reducing agency costs and information asymmetry.

The existing literature indicates a preference among firms with a highly concentrated ownership structure for leveraging debt financing over equity issuance, a strategic choice aimed at mitigating capital dilution effects (Céspedes, González and Molina, 2010). Furthermore, the scholarship reveals a

varied impact of managerial ownership within the ownership structure of state-owned enterprises on their debt levels. Specifically, a negative correlation between managerial ownership and indebtedness suggests that managers tend to avoid financial risks associated with higher financial leverage (Holderness and Sheehan, 1988). In contrast, a positive correlation implies a managerial incentive to strengthen their control over the firm (Harris and Raviv, 1988). This dichotomy reveals the complex relationships between ownership structures and financial strategies within corporate governance, highlighting the importance of aligning managerial incentives with the company's financial health and strategic objectives.

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