

## The Determinants and Impacts of Capital Structure Complexity: A Review of Literature

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### ABSTRACT

*This paper aims to provide a review of the determinants and impacts of capital structure complexity. The review covers papers from the Scopus and Web of Science databases from 2010 to 2020. A total of fifteen eligible articles were chosen for review. The search terms used "debt specialization," "debt diversification," "capital structure complexity," "debt complexity," "debt heterogeneity," and "debt concentration." We focus on the articles that discuss the determinants of capital structure complexity, the impacts of having a diversified capital structure, and the theories used to explain the relationships between them. The review indicates that capital structure complexity has significant impacts on company performance, credit rationing and future debt covenants. We conclude the review by offering a simplified diagram that shows a summary of the determinants and impacts of capital structure complexity. We hope the simplified diagram could assist future studies on capital structure complexity in different institutional contexts.*

**Keywords:** capital structure, debt heterogeneity, debt specialization, literature review

### INTRODUCTION

The study of capital structure has proven to be prevalent throughout the years. The literature focuses on how companies decide to finance their business activities, whether on the choice between debt and equity, or on the choice between arm's length debt (public) and private debt (banks) (Orlova et al., 2020). The difference between debt and equity lies in the lower cost of financing that arises from the argument in pecking order theory where equity has higher information asymmetry than debt, thus making equity more expensive due to the higher risk borne by the investors. For both public and private debt, private debt is seen to have a higher capacity to screen the borrowers, and it is easier for the company to re-negotiate the term of the loan, which is important for corporate liquidity management (Colla et al., 2020).

But Rauh and Sufi (2010) argued that it is important to recognize the heterogeneity of the debt because focusing only on total debt would conclude that the companies do not adjust their capital structure, whereas in fact, in their study, the authors found more than a quarter of 'stable debt ratio' companies experience significant changes in the underlying structure of their debt. Therefore, it is important to

take the debt heterogeneity (or more broadly known as capital structure complexity, which follows the study done by Orlova et al. (2020) that includes equity financing as well) into consideration. Capital structure complexity is defined as the variability or diversity of the capital structure that consists of specific and varying types of debt and equity instruments. It means that if a company relies on one type of capital structure, it will indicate less capital structure complexity.

It is observed that the usual trait in the studies of capital structure is the way leverage is measured. Leverage has been consistently measured in relation to either total debt to total assets, total long-term debt to total assets, or even total debt to total equity (Fama & French, 2002; Frank & Goyal, 2009; Pandey & Chotigeat, 2004; Rajan & Zingales, 1995; Tong & Green, 2005; Wiwattanakantang, 1999). It seems that debt in the capital structure studies is treated as a uniform, which means that there is no difference identified from one type of debt to another or from one type of equity to another. This is indeed puzzling because both agency theory<sup>1</sup> and pecking order theory<sup>2</sup> (Myers & Majluf, 1984) emphasize the importance of information asymmetry in determining the choice of financing. For example, sukuk financing has less information asymmetry than conventional bond due to its detailed cash flow projection in the debt agreement (Mohamed et al., 2015). This is because sukuk financing, also known as Islamic bonds, gives holders ownership of the underlying asset rather than just the right to be repaid from its sale proceeds in case of default. Another example would be that a debt with a credit rating has less information asymmetry than a debt without one. Debt financing also certainly has less information asymmetry as compared to equity since the bank conducts monitoring and refrains the managers from conducting moral hazard. If that is so, then why does the majority of capital structure literature limit the definition of capital structure to simply debt and equity without considering the variability of the capital structure itself?

Rauh and Sufi (2010) picked up this puzzle, and they observe that while companies do not change their debt-to-equity structure, that does not mean they are not obtaining new debt or equity. They simply change their debt composition by simultaneously adopting riskier and less risky debt at the same time. Thus, Rauh and Sufi (2010) argued that debt heterogeneity should not be overlooked as each type of debt carries differences in its cash flow claims, sensitivity to information, and incentive properties for managers. The authors also said that “recognition of debt heterogeneity might prove useful in examining the effect of financing on investment” (pg. 4278), connecting the importance of recognizing debt heterogeneity in studying capital structure. Capital structure complexity is also important to study the conflict between stakeholders and managers in accordance with the agency cost theory, which says conflicts between stakeholders or between managers and stakeholders can contribute to companies changing their complexity in capital structure. Colla et al. (2013) stated that Rauh and Sufi (2010) were the first to identify debt heterogeneity as an important dimension of the overall capital structure choice. In their study, Colla et al. (2013) emphasized recognizing debt heterogeneity in studying capital structure as it considers the potential conflicts of interest among different groups of debt holders, and how these conflicts may shape debt structure choices.

This sparks a series of studies attempting to identify the factors that drive a company to increase its debt complexity or heterogeneity. There has yet a systematic review of the determinants of capital structure complexity or debt heterogeneity, and this paper aims to fill that gap. Therefore, the objectives of this paper are to compile all the determinants of capital structure complexity and the impacts of capital structure complexity.

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<sup>1</sup> Agency theory (Jensen & Meckling, 1976) refers to the conflict between the principal and the appointed agent and agency cost refers to the costs incurred to mitigate the conflict. In an imperfect market, managers seem to act in their own self-interest, often at the expense of shareholders. The agency cost of debt indicates that higher debt complexity can lead to more agency conflict between managers and stakeholder as well as between stakeholders. This conflict can be mitigated by having monitoring activities and lesser information opaqueness.

<sup>2</sup> Pecking order theory argues that retained earnings are the most preferred source of financing as they has the least information asymmetry, followed by less risky borrowing to more risky borrowing to eventually resorting to external equity, which has the most information asymmetry

## METHODOLOGY

There are two main databases that we use to conduct our systematic literature review. The first one is the Scopus database, and the second one is the Web of Science database. The time frame selected is restricted to the last ten years, which is from 2010 until 2020. The reason we started the time frame in 2010 is because Colla et al. (2013) stated that Rauh and Sufi (2010) were the first to identify debt structure as an important dimension of the overall capital structure choice, meaning that the study for debt specialization, even if the study only focuses on the rated companies and their debt structure.

We begin our initial search by using the following selected keywords in the search bar: In the literature, the terms "capital structure complexity" or "debt complexity" have been used interchangeably with "debt heterogeneity." The term "debt heterogeneity" was first used in terms of capital structure literature by Rauh and Sufi (2010) and then also by Lou and Otto (2020), while the term "capital structure complexity" was used by Orlova et al. (2020). The objectives of the respective articles are different, where Rauh and Sufi (2010) aim to examine the types of debt adopted by credit-rating companies and Orlova et al. (2020) attempt to identify the determinants of capital structure complexity that include equity financing as well.

In addition to that, we also adopt various other synonymous terms to ensure our search is thorough. We also used "debt concentration," "debt specialization," and "debt diversification" terms to complement our two main terms. The terms "debt diversification" and "debt concentration" are used by Jadiyahpa et al. (2020) and Jadiyahpa et al. (2016) to measure whether debt diversification affects companies' value, whereas the term "debt specialization" is used by Colla et al., (2013) that refers to companies' tendency to adopt one type of debt in their capital structure. Then, we further refined our search to only include the article if it is published in the Economic, Econometrics, and Finance category or the Business, Management, and Accounting category, in the Scopus database. As for the Web of Science database, the article must be published under the categories of economic, business finance, management, and business categories.

In the first phase of searching, the number of articles that the Scopus database offers us is a total of 27 articles, and from the Web of Science database, a total of 26 articles are given. Next, we filtered the articles and selected the ones that relate to our study area. In order to do so, we evaluated the articles by their title and abstract to determine if they contribute to studies of the determinants of capital structure complexity. Thus, based on the Scopus database, out of 27 articles that came out of the search, we have determined that 15 articles study the area of capital structure complexity. We have also found 14 relevant articles in the Web of Science database. The breakdown summary of the selected articles is shown in Table 1.

**Table 1: Summary of literature search in Scopus and Web of Science databases**

<b>Scopus Database</b>											
Year	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
1 <sup>st</sup> Phase	9	3	3	-	5	2	-	2	-	-	3
2 <sup>nd</sup> Phase	7	3	1	-	2	-	-	1	-	-	1
<b>Web of Science Database</b>											
Year	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
1 <sup>st</sup> Phase	8	4	3	-	3	1	-	2	1	1	3
2 <sup>nd</sup> Phase	7	3	2	-	1	-	-	1	-	-	1

However, most of the articles shown in the Scopus database are similar to those that appeared in the Web of Science database. The additional article that appeared in the Scopus database is from 2016. In conclusion, the number of articles we reviewed was 16. This shows the scarcity of studies being done in this area, and it has only recently gained attention, as seen in the increasing number of articles published in the years 2018, 2019, and 2020. This provides ample research area gaps for future research to fill. Table 2 provides the list of articles chosen for the literature review.

**Table 2: List of Reviewed Articles**

Title	Authors	Journal	Years
Determinants of capital structure complexity	Orlova et al.	Journal of Economics and Business	2020
Does debt concentration depend on the risk-taking incentives in CEO compensation?	Castro et al.	Journal of Corporate Finance	2020
Creditors' governance, information asymmetry and debt diversification: Evidence from India	Jadiyappa, Sisodia, et al.	International Journal of Managerial Finance	2020
Accounting quality and debt concentration	Li et al.	Accounting Review	2020
Managerial stock ownership and debt diversification	Jadiyappa, Saikia, et al.	International Review of Finance	2020
Does debt diversification impact firm value? Evidence from India	Jadiyappa, Hickman, et al.	International Review of Economics & Finance	2020
Debt heterogeneity and covenants	Lou and Otto	Management Science	2020
Who monitors opaque borrowers? Debt specialisation, institutional ownership, and information opacity.	Platikanova & Soonawalla	Accounting and Finance	2019
Lending technologies, banking relationships, and firms' access to credit in Italy: The role of firm size	Angori et al.	Applied Economics	2019
Debt specialization and performance of European firms	Giannetti, C.	Journal of Empirical Finance	2019
Financial distress, refinancing, and debt structure	Dudley and Yin	Journal of Banking and Finance	2018
CEO inside debt and firm debt.	Beavers	Corporate Governance (Bingley)	2018
The evolution of debt policies: New evidence from business startups	Hanssens et al.	Journal of Banking and Finance	2016
Financial liberalisation and capital structuring decisions of corporate firms: Evidence from India	Jadiyappa et al.	Economics Letters	2016
Debt specialization	Colla et al.	Journal of Finance	2013
Capital structure and debt structure	Rauh and Sufi	The Review of Financial Studies	2010

## Determinants of Capital Structure Complexity

In this section, we attempt to categorize the articles into thematic determinants. Out of the 15 articles that we have reviewed, we have categorized them into six main determinants with control variable predictions. The main determinants of capital structure complexity are financial distress, credit rating, external governance, quality of information, managerial involvement, and financial reform.

### Financial Distress

Based on the review, the determinant variable for financial distress is measured using the liquidity deficiency (Rauh & Sufi, 2010), liquidity shock (Dudley & Yin, 2018), financial deficit (Orlova et al., 2020) and bankruptcy cost (Colla et al., 2013) variables. Using a sample of 305 credit-rating companies from 1996 to 2006, Rauh and Sufi (2010) looked into the factors that drove sample companies to adopt certain types of debt and how the level of credit-rating affects the types of debt the company adopts. It was stated that the company's debt structure priority changes when the company has operating investments to undertake as it undergoes financial difficulties. The debt structure in this situation shows the company increasing its secured and subordinated debts at the expense of its older or senior but unsecured debts. It indicates that when there is a need for external capital in the case of a

liquidity deficiency, the company tends to change its debt structure. They stated that the company's debt structure priority changes when it has operating investments to undertake due to financial difficulties. The debt structure in this situation shows the company increases more on the secured and subordinated debts at the expense of the older or senior but unsecured debts. It indicates that when there is a need for external capital in the case of a liquidity deficiency, the company tends to change its debt structure.

Dudley and Yin (2018) also found a similar effect where the authors introduced liquidity shock in the priority structure of a company. Liquidity shock refers to the circumstances in which companies face an insufficiency of cash, whereas priority structure refers to the company prioritising the use of secured debts, subordinated debts, and unsecured debts. The authors discovered that a company changes its priority structure when facing high liquidity risk, and the effect is exacerbated when the company has low investment cash flow. The two studies indicated that capital structure complexity is affected by liquidity distress and not economic (financial) distress due to priority structure, which is done to preserve future companies' capacity to borrow, especially for companies that are close to their threshold default. This finding is further proven by the study by Orlova et al. (2020), in which the authors found that when the company is facing a financial deficit, it will have a higher capital structure complexity because the safer sources of financing have already been exhausted, forcing the company to diversify its capital sources. Colla et al. (2013) further emphasized that the bankruptcy costs (using the measurement of asset tangibility and cash flow volatility) can be reduced by employing a more concentrated debt structure.

### **Credit Rating**

The most popular indication as to whether the company has access to the capital market or not is by looking at its rating status, that is, whether the company has a credit rating or not. This dummy proxy has been adopted in several studies of debt heterogeneity (Orlova et al., 2020; Platikanova & Soonawalla, 2019). They argued that having a credit rating increases the companies' access to the capital market and thus enables them to obtain diversified financing sources, increasing their capital structure complexity. They have found that rated companies (especially for investment-level ratings) have greater access to different types of capital as compared to unrated companies because rated companies are seen to have more monitoring, and thus, information asymmetry is reduced.

When Rauh and Sufi (2010) studied debt structure using US-based rated-only companies, the authors found that companies with lower credit ratings have a more diversified debt structure, in which they employed more subordinate and secured debts, as compared to companies with higher credit ratings. As the companies' credit ratings drop from investment grade to speculative grade, they relied more on subordinate and secured debts. The authors rationalized this finding by stating that, instead of switching their public debt (issuance of securities) to private debt (bank-based financing), the companies simultaneously increased their dependence on both secured bank debt and subordinated bonds and convertibles. The authors also found that despite the fact that these companies adopted simultaneous financing from public and private debt, the companies with deteriorated credit ratings still lose access to the capital market, but more specifically in arm's length short-term debts like commercial papers. Low-credit-quality companies rely more heavily on secured bank debt.

The finding is supported by Colla et al. (2013), where in their study, they included all companies in their sample regardless of whether they were rated or not and then separated the rated and unrated companies into subsets. Colla et al. (2013) also found evidence of high debt specialization most prominently among the companies with low credit ratings. It means that companies with good credit ratings often diversify their debts. This result is the one that most subsequent studies on debt heterogeneity concur with, in which they also found companies with good credit ratings have higher access to the capital market and thus have a more diversified debt portfolio (Castro et al., 2020; Orlova et al., 2020; Platikanova & Soonawalla, 2019).

## External Governance

The idea behind external governance is to monitor any moral hazard activities that the management might undertake at the expense of the creditors. There are two types of external governance identified in the literature review. The first type is creditor governance. If banks have inside information about companies' business activities, then the information asymmetry that exists between the lender and borrower can be reduced, thus reducing the effect of the agency cost of debt. Thus, Jادیappa, Sisodia, et al. (2020) studied the debt heterogeneity of companies that have bank-appointed directors on their board of directors. They posited that a bank-appointed director will allow banks to have access to private information (which will reduce information asymmetry) and obtain quality information in a timely manner. As such, other creditors would have more confidence in companies where a bank occupies a board position, which may act as a form of assurance and subsequently help companies secure debts from other creditors. The results of their hypotheses are that companies with bank-appointed directors have statistically higher debt heterogeneity as compared to companies without bank-appointed directors, and they have higher access to different types of debt than the ones without bank-appointed directors, as indicated by diversified debts.

The second type of external governance was identified by Platikanova and Soonawalla (2019). They suggested that stable institutional ownership reduces the demand for monitoring in debt contracting (a similar function to creditors' governance), as predicted by the monitoring hypothesis. Stable institutional ownership is defined as an institution that owns more than 25% of the company's equity for a longer period of time. This reduces the demand for monitoring, and thus, the companies may not need to employ concentrated debt as monitoring is done by institutional investors. The effectiveness of institutional ownership is more pronounced when the institutions maintain their stake in the company for a longer period of time. Furthermore, when they studied the effect of institutional ownership on debt concentration when the information opaqueness was high, the result found that stable (less volatile) institutional ownership provided effective monitoring.

## Quality of Information

Information opaqueness refers to the difficulties for an outsider to obtain reliable information about the companies, and this lack of transparency increases the creditors' information collection costs and provides stronger incentives for monitoring in debt contracting. Following this statement, Platikanova and Soonawalla (2019) hypothesized that in the event of high information opaqueness, the degree of debt concentration should be high because concentrated debt improves debt monitoring. Creditors who extend a large sum of credit are motivated to monitor the debt contract. The authors used accrual quality as their proxy for information opaqueness, and the result showed that companies with more opaque financial reports tend to have a larger dependence on relatively few debt types. This finding corroborates the finding made by Colla et al. (2013), where they also found that opaque companies that face high information collection and monitoring costs have a more concentrated debt structure.

This observation is also confirmed by Li et al. (2020), who found that companies with higher accounting quality have a lower degree of debt concentration, or in other words, have more diversified debts, because the high accounting quality is able to mitigate the risk and cost of creditor coordination failure. This is due to the fact that high-quality accounting information helps creditors to better assess a firm's future cash flows. The proxy for accounting quality is an index score based on 1) the occurrence of material internal control weaknesses, 2) accounting restatements, and 3) SEC Accounting and Auditing Enforcement Releases, emphasizing the importance of auditors in ensuring accounting quality.

## Managerial Involvements

There are three types of managerial involvement found in the literature review, and all three variables lead to a similar conclusion: managerial involvement, whether through stock ownership, inside debts, or risk-taking incentives, leads to high agency costs and, subsequently, to high debt

concentration. The first reference to managerial involvement refers to an article by Jadiyahappa, Saikia, et al. (2020), where they study the impact of managerial stock ownership on debt diversification. Managers with higher stock ownership have the tendency to adopt less leverage or less short-term debt. This is because managers with higher managerial ownership are motivated to engage in risky behavior to maximize the firm's value, but this act could hurt debtholder interests. To avoid intense scrutiny from debtholders, managers will find it easier if they reduce external monitoring by debtholders, and having high debt diversification would facilitate such an environment. Therefore, the authors posited a hypothesis that there is a positive association between managerial stock ownership and debt diversification, meaning the higher the managerial ownership, the more diversified debt the company would have. The impact is more pronounced in smaller companies due to the fact that smaller companies have higher information asymmetry.

The second managerial involvement is based on a study by Beavers (2018), where the author finds companies with CEOs who have inside debt will have even more concentrated debts. CEO inside debt is defined by executive compensation in the form of pension benefits and deferred compensation, stock options, or other CEO incentives. According to Jensen and Meckling (1976), modeling executive compensation similar to the company's financing of assets with debt and equity has important implications for the alignment of manager incentives with stakeholders. Beavers (2018) found that higher CEO inside debt indicates higher amounts of credit lines and commercial loans and lower percentages of term loans and senior bonds. The author also discovered that when the company's size increases, the effects of inside debt are mitigated, suggesting that large companies are more likely to diversify their debt holdings. This is because, following the agency theory argument, high debt diversification increases the conflict between the stakeholders, and therefore, CEOs with inside debt prefer low debt diversification to avoid high agency costs.

The same observation can be found in the third type of managerial involvement, which is when CEOs are offered larger risk-taking incentives. Castro et al. (2020) stated that risk-taking incentives are viewed unfavorably by creditors because the cost of funding increases as risk-taking incentives increase. To avoid this, debt concentration is adopted because it normally gives a positive signal to the creditors that the company does not plan to expropriate the creditors' wealth ex post in the case of distress. On the other hand, if a company adopts a more complex or diversified debt structure, the coordination problem among the creditors increases, and this provides opportunity for the shareholders because the value of equity increases when 1) the potential claims of creditors during financial distress decrease and 2) the strength of shareholders in the liquidation process rises. The negative signaling is exacerbated when the CEO is seen to be taking higher risk-taking incentives in CEO compensation. Furthermore, this effect is stronger in the presence of risky companies and projects. Thus, the authors suggest that the negative signaling as seen from high risk-taking incentives can be mitigated by adopting a more concentrated debt to signal to the creditors that they are given more protection and empowerment, especially in the event of financial distress.

## **Financial reform**

A highly regulated financial system usually consists of one or more of the following characteristics: 1) administered interest rates; 2) directed credit schemes; 3) subsidized loans; 4) capital controls; and 5) a credit ceiling. In this environment, the allocation of resources is inefficient and thus causes distortions in credit allocation, which affect corporate financing decisions. The repressed state of the financial system also leads to a very minimal level of financial innovation.

Jadiyahappa et al. (2016) argued that a minimal level of financial innovation leads to companies having no other option of financing sources but, instead, they must resort to whatever few available financial instruments, irrespective of the suitability for their requirements. Thus, they hypothesized that a high degree of debt concentration is expected in such regulated systems. During the Indian financial liberalization in 1991, the structural reforms observed were: 1) the stock market became a more important source of capital; 2) the banking system was developed in terms of its size, efficiency,

competition and geographical spread; 3) governmental intervention in the financial market was reduced; and 4) companies had greater freedom to choose debt instruments to meet their financial requirements. The reduced rigidity of the system should decrease the companies' debt concentration. However, their results show that companies increase their debt concentration even after financial reform and a decrease in the diversification of debt sources. They rationalized this result by stating that it is mainly due to the substitution of informal sources of debt (debt acquired from friends, family, or inter-corporate bonds) by formal sources of debt like bank debt. Therefore, it can be stated that in the Indian context, financial reforms increased access to formal sources of debt.

### **Initial Debt Policy**

Hanssens et al. (2016) stated that if past leverage ratios have a possible bearing on future leverage ratios, then it is important to study the evolution of leverage from the earliest phase of a firm's existence, which is the founding year. Using imprinting theory as their basis of argument, CEOs "imprint their mark" on firms' financial policies, regardless of whether they are optimal, and this will have a long-term impact on future debt policies and debt concentration. In this theory, Boeker (1989) states that policies that organizations set on a course at founding from which change may be costly or difficult, will define initial policies and create internal consensus around the initial policies of the company. The internal consensus can make the strategy to be less open to subsequent questioning or redirection by organizational participants. Based on the results, they found that the debt policy adopted in the founding year had a significant impact on the debt concentration over both short-term and long-term periods of time. The significant results do not lose their significance even after separating the sample into subsets of 6 and 11 years after the inception of the company.

### **Control Variables**

Aside from the main determinants, the review also found that the usual determinants for capital structure also affect capital structure complexity, and thus, studies also control for those variables. Several control variables are added, such as leverage, market-to-book value (Tobin-q), profitability, size, asset tangibility, dividend payer (dummy variable with 1 = dividend paid), and cashflow volatility (Castro et al., 2020). Colla et al. (2013) also controlled for research and development (R&D expense over total assets), age of the company, cash holdings, asset maturity, and bankruptcy risk.

### **Impacts of Debt Heterogeneity**

Aside from determinants or factors affecting debt heterogeneity, there are also several studies that focused on the impacts of debt heterogeneity. Based on the search, we have found three main impacts of debt heterogeneity: the company performance, future debt covenants, and credit rationing.

#### **Performance**

The first study of the relationship between debt heterogeneity and performance was conducted by Giannetti (2019). In this paper, the author aims to study the effect of different levels of debt heterogeneity (this paper uses the term debt concentration, as stated in Colla et al. (2013)) on a company's performance in times of economic crisis. The performance is proxied by the level of turnover reduction, in which the author aims to see the propensity of turnover reduction to increase debt concentration. The result suggests that "it is less likely to observe a severe reduction in firm turnover if firms have a diversified debt structure which shows that firm ability to substitute among alternative instruments of debt finance is important to uphold the economy from adverse real effects of a financial crisis" (p. 271). It means that companies with less debt concentration are less likely to incur severe turnover reductions. Therefore, the author concludes by emphasizing that a policy to promote the use of the market as a funding alternative for the company should be introduced.



In addition to turnover reduction, Jادیappa, Hickman, et al. (2020) hypothesized that debt diversification affects a company's value based on two sides of the argument using the agency theory. The first side of the argument supports the notion that debt diversification affects companies' value positively. This is because having diversified debts can reduce the financial constraints faced by the companies in the face of credit rationing by financial institutions, in which the companies that seek high amounts of credit usually imply that they intend to use it for future investment projects, and those investments will naturally lead to a higher company's value. The second side of the argument states that debt diversification affects the companies' value negatively. The efficiency of monitoring decreases in the presence of multiple actors due to the free rider problem hypothesis because the incentive for lenders to monitor the debt decreases as the credit amount decreases. Having diversified debt leads to an increase in the agency cost of debt through less effective lender monitoring, which subsequently affects the value of the companies. It means that the most effective monitoring happens when there is only one lender that allows a considerable amount of credit to the borrower, and companies with concentrated debts have a high company value.

The measurement of performance used by Jادیappa, Hickman, et al. (2020) is Tobin Q (market-to-book value), which is different from Giannetti (2019), and return on assets (ROA). They have found that debt diversification has negative effects on the company's performances (both Tobin Q and ROA). They also found that companies with diversified debts have a lower asset turnover ratio (a proxy to measure agency cost) than companies with specialized debts, indicating agency cost is indeed worse in companies with more diversified debts.

### **Debt covenants**

Lou and Otto (2020) argued that many owners of heterogeneous debt may fail to coordinate with each other in the event of default. The disagreement may be due to their differing cash flow requirements and investment horizons. These will lead to an increase in the cost of financial distress and subsequently, the debts will become more expensive. High debt heterogeneity means having a high number of creditors that hold smaller amounts of debt, and thus, the creditors have less incentive to monitor the borrowers. A higher number of creditors could result in having less information on the borrower, and if liquidation or debt restructuring happens, the creditors become less efficient.

Because of these problems, the authors suggested that covenants can help mitigate the effects of the issues. In their study, they found that the new debt obtained by a company with diversified debt will contain more debt covenants, which means companies may be encouraged to concentrate on the debt to have more future financial and operational flexibility. It also proves that covenants are used to reduce the conflict between equity holders and creditors as well as the conflict of coordination that exists amongst the creditors.

### **Credit rationing**

Credit rationing refers to the practice of banks rationing the available credit to their lenders, including existing lenders that are asking for additional funding. Angori et al. (2019) study the determinants that contribute to the company's probability of being subjected to credit rationing by financial institutions. The authors concluded that debt concentration exerts a positive effect on companies' access to credit (or companies experience less credit rationing), as it contributes to mitigating the conditions of information asymmetry between the borrower and lender.

## **DISCUSSION AND CONCLUSION**

With the exception of financial reform or financial liberalization, which discusses the impact of financial system changes (macro-level) on companies' debts (micro-level), most of the determinants in the literature focus on internal factors (company-specific factors), such as the credit rating of the companies, the involvement of the management in the form of their stock ownership, inside debts and



to capital rationing by the creditors. Thus, it is clear that it is more beneficial for the companies to adopt a more concentrated debt policy than a more diversified one.

The study of capital structure complexity is still relatively scarce. We have explained the determinants and the impact of having a concentrated or diversified capital structure, together with the recurring theories or hypotheses used to explain the relationships. The scarcity of studies on the complexity of the capital structure offers research gaps for future studies. For example, we can see that the majority of the studies being done used developed capital market samples and very little from developing countries. Furthermore, there are other macroeconomic factors that could be included, such as the impact of recessions or economic shocks, changes in government fiscal policies and interest rates. In conclusion, we hope this paper provides a comprehensive overview of the studies conducted on capital structure complexity.

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## AUTHORS' CONTRIBUTION

Siti Nabilah proposed the idea of a review. Siti Nabilah searched the relevant articles in Scopus Database while Nik Nurul Aswani reviewed the Web of Sciences Database. Suryani contributed to the discussion and conclusion while editing the manuscript. All authors provided critical writings process and contributed the shape of the paper.

## CONFLICT OF INTEREST DECLARATION

We certify that the article is the Authors' and Co-Authors' original work. The article has not received prior publication and is not under consideration for publication elsewhere. This research/manuscript has not been submitted for publication nor has it been published in whole or in part elsewhere. We testify to the fact that all authors have contributed significantly to the work, validity and legitimacy of the data and its interpretation for submission to Jurnal Intelek.

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