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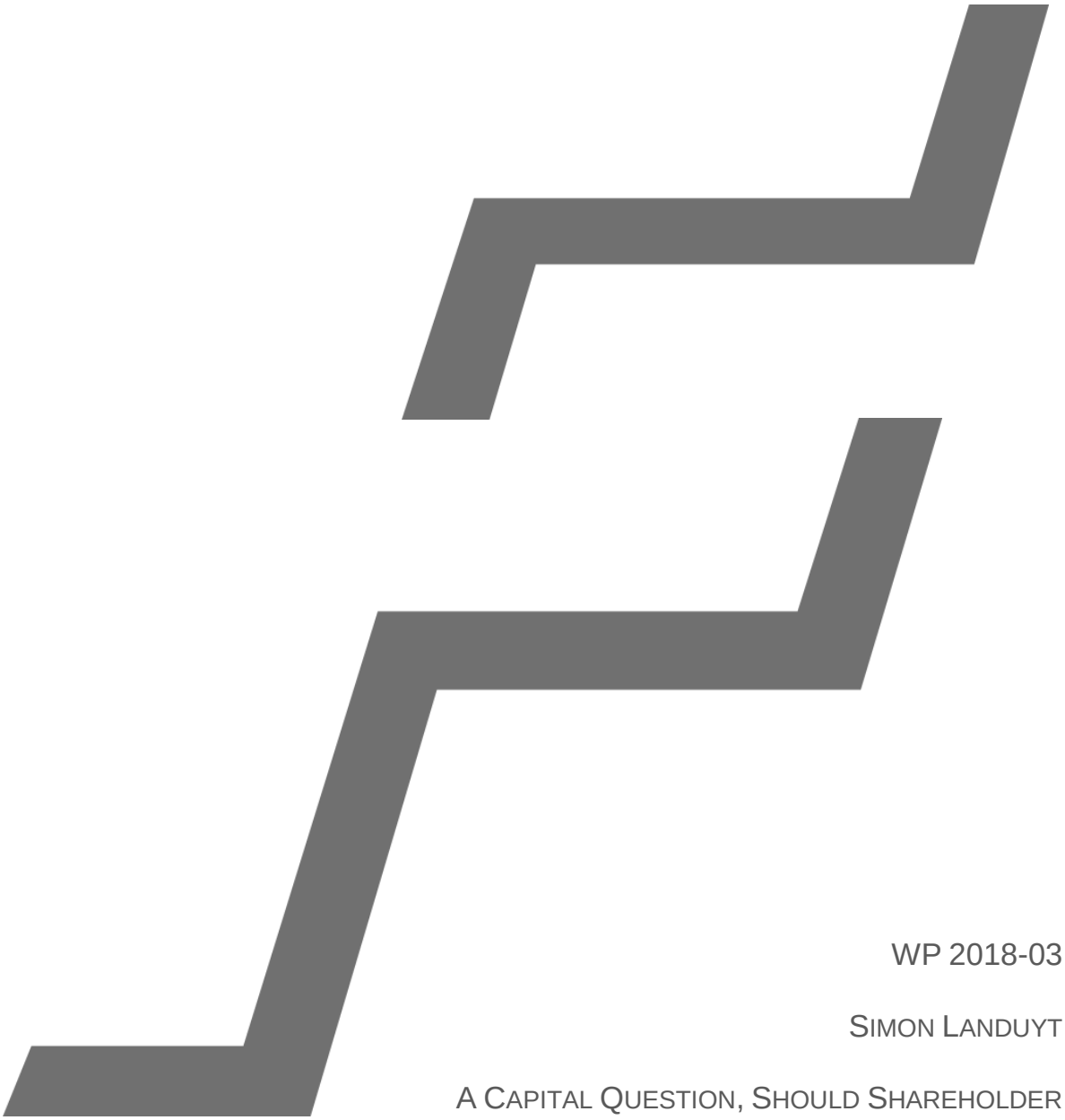

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A CAPITAL QUESTION, SHOULD SHAREHOLDER LOANS BE AUTOMATICALLY SUBORDINATED?

GHENT UNIVERSITY

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Whether or not shareholder loans should be automatically subordinated in bankruptcy is a much discussed topic in corporate and insolvency law. In this article I show that, because of the existence of non-adjusting creditors, shareholder-managers will sometimes have the incentive to take excessive risk. The subordination of shareholder loans forces the shareholder to internalize these costs. On the other hand, subordination of shareholder loans might also deter the undertaking of desirable projects. On balance, it is likely that subordination is efficient and reduces the agency cost of debt. Furthermore, I will show that shareholders should bear more risk because they are better monitors, do not suffer from information asymmetries and have higher expectations of default. Therefore, if shareholders and outside creditors could hypothetically bargain *ex ante* in a world without transaction costs on the rank of their debt claim, there is not much doubt that they would agree on subordination. Proving that subordination of shareholder loans is inefficient would imply that the subordinated position of equity is inefficient – and further shake the concept of legal capital on its foundations.

The author welcomes your comments at Simon.Landuyt@UGent.be.

The final version of this paper will be published elsewhere.

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1. Introduction

The existence of a rationale for the by law automatic subordination of loans provided by a shareholder ('inside debt')[1] on insolvency (or liquidation) of a limited liability company has caused much ink to flow from the pens of academics and other company and insolvency law experts without reaching consensus.[2] For example, about half of the respondents to the consultation of the High Level Group of Company Law Experts instituted by the European Commission deemed that subordination (of inside debt) was undesirable, while another 41% believed subordination is a valuable feature of corporate and insolvency law.[3] This debate is also reflected in the prevailing law, some jurisdictions have rules automatically subordinating shareholder loans,[4] others not.[5] Although the liquidation dividend flowing to unsecured creditors is known to be low to non-existing on average,[6] case law[7] in many jurisdictions shows that often the (automatic) subordination of shareholder loans does matter to the outside creditors.[8] Indeed, when the debt claim of the shareholder is subordinated on liquidation to those of outside creditors and the company assets do not suffice to repay all liabilities, the outside creditors benefit and the shareholder suffers since the liquidation dividend of the latter in his capacity as creditor is redistributed between the outside creditors.

The reason many jurisdictions oblige the shareholder-lender to rank last on insolvency, and more in general why limited liability still has some critics, is not because of a general dislike for 'capitalist' shareholders, but because one feels intuitively that a shareholder can transfer value from weak creditors to himself by substituting equity for debt. Without such creditors, automatic subordination of shareholder loans would likely be much less of a topic in academia and politics because all the risk of the outside creditors would be reflected in the price they ask. However, there are many weak creditors active on the market who do not take the existence of limited liability into account.[9] For example, consumers, small suppliers, tort victims, etc. are often not in a position to

[1] The term 'inside debt' was coined by Jensen and Meckling to describe a debt claim on a company held by the person who manages the company. See Jensen and Meckling (1976), p 352.
[2] Especially in Germany, see an overview of the colossal doctrine on shareholder loans only up to 2003: Henckel and Gerhardt (2004), pp 1014-1018.
[3] High Level Group of Company Law Experts (2002), p 149.
[4] Most famously the German Recht der Gesellschafterdarlehen which was introduced by the MoMiG in 2008. See for example Clemens (2012).
[5] For example, the UK, France, the Netherlands and Belgium have no rules on shareholder loans. The US has a fault-based subordination regime ('equitable subordination'). See for some recent thoughts on equitable subordination: Moringiello (2011).
[6] See for example for Germany in the period 2002-2007: Kranzusch and Icks (2009). For the US (Arizona and New York states): Bris, Welch and Zhu (2006). For some data on Germany, France and the United Kingdom: Blazy, Petey and Weill (2014).
[7] At least in 1996, Claussen noticed a massive increase in cases relating to the subordination of shareholder loans since 1985 in Germany. See Claussen (1996), p 317.
[8] Obviously, this is even truer when the shareholder loan is secured.
[9] Similar value transfers from weak creditors also occur with security interests and limited liability versus unlimited liability. See (amongst many) respectively Zhang (2014), pp 793 et seq and Smith and Warner (1979), pp 118-119.

easily adjust their price because it is irrational or impossible for them to do so, they do not have the bargaining power, or sometimes they are just not intellectually sophisticated enough to grasp the 'tools' available on the legal market which can be used to their disadvantage.[10] It is those creditors some policy makers want to protect by establishing a rule of automatic subordination of shareholder loans. Shareholders - in their capacity as creditor - to the contrary do not need special protection it is argued. They are entirely voluntary creditors, very well informed, and - being in control of the company - can perfectly adjust the price they ask to reflect their increased risk due to a rule of automatic subordination.[11] And last but not the least, unlike outside creditors, shareholders reap all the benefits when things go well for the company but their liability is limited to their investment when things go bad.[12] Shouldn't they, as *quid pro quo*, at least lose their investment instead of sharing the liquidation dividend with the other creditors?

As such, it does not look unfair that the shareholder is not allowed to redistribute wealth from the poor elderly aunt paying upfront for her life-saving medication, the small supplier who is forced to accept extended payment terms, or the random victim of an environmental catastrophe caused by a limited liability company. If, *ex post*, such catastrophe happens, there is not much doubt that our moral compass will most of the times say that the shareholder should come last when the assets of the company are distributed. However, it can easily also be the other way around. Imagine the situation of a small local grocery, owned by a hard working family man with seven children owing a loan to a mighty bank owned by rich shareholders, which goes bankrupty. In such case, our moral compass might indicate another solution than subordination. In any case, fairness and distributional grounds are not the only possible policy considerations.[13] The holy argument against automatic subordination of shareholder loans is that it will *ex ante* restrict beneficial credit to companies.[14] In other words, because of the automatic subordination of his claim, a shareholder would be deterred from extending credit to his company, and as such, investments which are valuable for society would be lost.[15] This argument is part of the bigger idea that economic efficiency is the envisaged normative goal, which is shared by many law and economics scholars.[16] It is not wrong to 'steal' from the weak, as long as this increases total societal wealth.[17] In this respect, Kaplow and Shavell made a famous argument. Corporate and insolvency law (and private law in general) should not be concerned with distributional issues,[18] even if you are in favour of redistribution, because

[10] Because they are 'weak' Blumberg categorises (some) trade creditors, consumers and employees together with 'real' involuntary creditors, *i.e.* tort victims. See Blumberg (1986), pp 618-619. LoPucki calls weak creditors 'uninformed creditors' since they underestimate the potential to redistribute wealth by making use of certain legal concepts (in his case security interests, in the case of this article, limited liability). LoPucki criticizes, and I can only totally agree, the high level of sophistication that is assumed in economic modelling. See LoPucki (1994), p 1916 et seq.

[11] Admittedly, a 100% shareholder does not care much about the price of the debt he provides to the company in going concern. He will reap in his capacity as shareholder the decrease in price which he concedes in his capacity as creditor and vice versa (see Kaplan and Yoder (1981), p 595).

[12] Bachmann et al. (2014), p 176.

[13] Gelter (2006), pp 483-484.

[14] The same argument is made to legitimize the redistributive effect of security interests. See Warren (1997), p 1389; Bebchuk and Fried (1997), p 1293.

[15] See amongst others United States Court of Appeals (10th Circuit) 30 May 1979 (In re Mid-Town Produce Terminal, Inc), *Federal Reporter Second Series Volume 599*, 392; United States Northern District Court Illinois 17 August 1993 (In re Octagon Roofing), *Bankruptcy Reporter Volume 157*, 858; United States Court of Appeals (6th Circuit) 22 October 2001 (In re Autostyle Plastics, Inc), *Federal Reporter Third Series Volume 269*, 747; United States Disctrict Court Delaware 10 March 2003 (In re Submicron Systems Corporation), *Bankruptcy Reporter Volume 291*, 325; Posner (1976), p 518; Clark (1977), p 539; Long (1993), p 117; Drukarczyk (1995), pp 199 et seq.; Rickford (2004), p 985; Engert (2006), pp 354-355; Gelter and Roth (2007), p 45;Tucker (2010), pp 191-192; Schröder (2012), p 23; Ulbrich (2011), p 179; Eidenmüller (2016), p 19.
For the Swiss lawgiver, this was the main reason not to introduce automatic subordination of shareholder loans: Botschaft zur Revision des Obligationenrechts (GmbH-Recht sowie Anpassungen im Aktien-, Genossenschafts-, Handelsregister- und Firmenrecht) 19 December 2001, 3158, accessible on <https://www.admin.ch/opc/de/federal-gazette/2002/3148.pdf>.

[16] Efficiency is understood in this article as wealth maximization in the Posnerian way. He writes in this respect: *Wealth is the value in dollars or dollar equivalents […] of everything in society. It is measured by what people are willing to pay for something or, if they already own it, what they demand in money to give it up. The only kind of preference that counts in a system of wealth maximization is thus one that is backed up by money […]*". Therefore, in this article, a rule can be understood as efficient when the value in money is maximized. As such, distributional concerns are left out of the equation. See Posner (1979), p 119. For a specific application in corporate law, see Bainbridge (2002), p 20. For criticism on the wealth maximization concept of Posner as normative principle, see amongst others: Coleman (1980); Dworkin (1980); Kronman (1980).

[17] See on the distinction between wealth transfers and wealth losses. Carlson (1998), pp 1665-1668.

[18] In any case, they are of the opinion that wealth distribution through corporate law is not possible because "*[…] in many areas of corporate law, most investors will be on each side of a type of transaction (approximately) equally often, so any distributive effects of rules that are favorable to one type of party will tend to cancel out in the balance.*". See Kaplow and Shavell (2002), p 33.

redistribution can only be efficiently achieved through the income tax system due to the "double distortion" problem.[19] As such, it makes economically no sense to pursue "creditor protection" as some kind of higher moral principle, unless the creditor protection rules also increase total societal wealth (which will be mainly the case by eliminating externalities).

Whatever one believes is the goal of corporate- and insolvency law, it is my intent to show in this article that not subordinating shareholder loans is most likely in aggregate economically inefficient or Kaldor-Hicks negative.[20] I am not the first one to analyse shareholder loans and subordination from an economic point of view. The subject has been hotly debated in the - mainly German - law and economics literature in the past decades and excellent analyses already exist.[21] I will try to add some spice to this existing literature by explaining how weak creditors can be the victim of shareholder loans, why it is unlikely that the subordination of shareholder loans will deter socially desirable investment, and why on average shareholders and creditors will both agree to subordinate the shareholders' debt claim if they realistically could bargain. First I will start in section 2 with explaining why under a set of, rather unrealistic, assumptions, the subordination of shareholder loans does not matter. Throughout the rest of the article, those assumptions will be relaxed. In section 3 of this article, I will describe the priority-independent features of (inside) debt. As they are priority-independent, the beneficial effects on firm value of those features will not be lost due to subordination. In section 4, priority and subordination does matter. An analysis will be made of the effects of automatic subordination on the agency and other costs of limited liability and how inside debt can be used to transfer wealth from non-adjusting creditors to the shareholders. In section 5, I will give some reasons related to risk-aversion and information asymmetries why allocating the riskiest financial contract to the shareholder is efficient. In section 6, I will explain why in a world without transaction costs shareholders and creditors would almost always agree upon subordination and that this can be observed in reality too. Finally in section 7, a conclusion will be presented. Apart from the main theme, subordination of shareholder loans, throughout this article, I will also try to provide a deeper insight in the rationale behind the subordinated position of equity.

This article only has as object *unsecured* shareholder loans. Notwithstanding many of the findings also apply to shareholder loans which are secured by collateral, and the case for subordination of secured shareholder loans might even be stronger,[22] loans secured by collateral have some specific characteristics which require a separate analysis.[23] Further, the scope of this article is limited to *closed* companies, and more specifically closed companies with a shareholder (with a residual claim) who fully controls the company (the owner-manager, or as I will sometimes call him, the 'entrepreneur') and therefore it is assumed that the interests of the shareholder and manager are perfectly aligned.[24]

2. The capital structure irrelevance principle

The starting point of almost all capital structure theories is the irrelevance principle of Modigliani and Miller.[25] They showed that in perfect markets, when companies and individuals can borrow at the same rates, without taxes, bankruptcy costs, agency costs or asymmetric information, substituting equity for debt cannot create company value as the reduced cost of debt due to the increase in equity will be exactly offset by the augmented cost of equity (and vice versa). This is not only true for debt and equity, but for every financial contract entered into by the company (*i.e.* preference shares, secured debt, subordinated debt, etc.).[26] Neither does it, for

[19] The idea is that income taxation only distorts the execution of desirable projects because it decreases the return of the beneficiary because of the redistribution. While an inefficient legal rule not only distorts because of the redistribution, but also because the inefficient legal rule does not maximizes output. See Kaplow and Shavell (1994), pp 667-681. For an overview of the critics of this view see: Fenell and McAdams (2016) pp 1062-1063.

[20] Under the standard Kaldor-Hicks definition of efficiency, a rule is efficient if it maximizes total social wealth, even if some parties' wealth is reduced. See Coleman (1980), pp 513-514.

[21] Proponents of automatic subordination: Landers (1975); Klaus (1994); Röth (2009); Trautbeck-Kim (2011); Hewer (2013); Halmer (2013).
Opponents or scholars who propose an alternative: Posner (1976), pp 517-518; Drukarczyk (1995); Fischer (1996), p. 179; Bezzenberger (2000), p 23; Götz (2001); Engert (2004), p 813; Gelter (2006), p 500; Mülbert (2006), pp 396-399; Cahn (2006), p 287; Eidenmüller (2007), p 70.

[22] See footnote 67.

[23] This will, however, not impede me to rely heavily on some concepts which are extensively explored in the academic literature on the rationale of secured lending because that literature also deals with priority issues.

[24] Non-equity managers will often have much less incentive to engage in risky activities because they don't benefit from the upside and bankruptcy will likely end their employment and damage their human capital. See amongst others Leebron (1991), p 1590. See also Easterbrook and Fischel (1991), p 56.

[25] Modigliani and Miller (1958).

[26] Brealy and Myers (2011), p 434. Specifically for the substitution of unsecured debt by secured debt: Schwartz (1981), p 7-9; Triantis (1992), p 226-227. Critical: Carlson (1998).

example, matter that the shareholders benefit from limited liability.[27]

Relevant for this article, it also does not matter *who* provides the investment to the company. No shareholder, manager, director or any other insider or outsider can theoretically create additional firm value by providing the company with resources because of his or her capacity. Substituting equity for a shareholder loan has therefore in theory no other effect than a distributive one, shareholders will receive more bankruptcy value, outside creditors less. As such, outside creditors will increase the price they ask to reflect the decrease in expected liquidation dividend. This will, however, be fully compensated by the decrease in price requested by the shareholder for his investment. Therefore, the total cost of capital of a company will in theory remain completely unchanged.[28] Automatic subordination of the shareholder loans only reverses this effect. The same reasoning is valid for the subordinated position of equity. If equity gets a higher ranking in case of insolvency, investors with a fixed claim will increase their price. As such, it makes under the assumptions of Modigliani and Miller no sense to say that shareholders should hold the lowest rank since they benefit from an unlimited upside or that the equity cushion protects creditors. Additional risk is simply incorporated in the price investors pay for a claim on the assets of the company. As such, priority is not relevant for capital structure.

Notwithstanding, it is clear that most companies pay much attention to their capital structure. This is because the assumptions of Modigliani and Miller in reality do not hold.[29] In the following sections, I will relax those assumptions and show what the place of inside debt is in the capital structure of a company.

3. Priority-independent benefits of (inside) debt

In this section and for now only 'priority-independent,[30] in the sense that they would hold even if shareholder loans are subordinated, features of inside debt will be explored. In section 4 and 5, priority-dependent reasons for the existence of inside debt will be discussed. The understanding of the priority-independent features of inside debt is important for two reasons. First of all because it will show that subordination will not impact many economically beneficial features of inside debt. Secondly, these features explain for a large part why shareholders sometimes invest under the form of debt, not subordinated equity. Because those features are maintained under a rule of subordination, as I will explain further in section 6, shareholders would hypothetically agree *ex ante* to subordinate their debt claim.

In the following paragraphs, I will show that (i) inside debt will be provided if the shareholders want to benefit from the 'tax shield' of debt and no outside creditors are willing to lend, and (ii) there are fewer transaction costs associated with inside debt.

(i) The trade-off theory and asymmetric information

Modiglinai and Miller do not take taxes and bankruptcy costs into account. Interests paid on debt are in many jurisdictions tax deductible. As debt creates a 'tax shield', one would expect companies to be financed 100% with debt. However, the higher the debt level, the higher the likelihood of a costly bankruptcy.[31] Therefore, under the original trade-off theory, firms reach an optimal capital structure when the tax benefits of debt are balanced against the costs of the increased likelihood of bankruptcy due to the diminishing equity cushion, as there is no legal obligation to repay equity.[32] In many jurisdictions specific rules exist to requalify debt provided by insiders, and especially shareholders, into less beneficial equity for tax purposes.[33] Since shareholder loans are more precarious from a fiscal point of view, one would expect a company to attract outside debt.[34]

[27] See for example Halpern et al. (1980), pp 126 et seq; Easterbrook and Fischel (1985) Limited Liability and the Corporation, p 98.
[28] See in this respect also Bebchuk and Fried (1997), 1331.
[29] See for an overview of theories which relax the assumptions of Modigliani and Miller among others: Harris and Raviv (1991); Miglo (2016).
[30] The notion 'priority-independent' is borrowed from Bebchuk and Fried who use it in the context of secured loans. See Bebchuk and Fried (1996), pp 872 et seq.
[31] Direct bankruptcy costs are amongst others fees paid to agents (lawyers, trustee, etc.) involved in the liquidation process associated with bankruptcy. Indirect bankruptcy costs are for example the increased price suppliers and employees require from the company because of the increasing likelihood bankruptcy proceedings will commence if there is no or only a limited equity cushion.
[32] This theory goes back to among others Kraus and Litzenberger: Kraus and Litzenberger (1973).
[33] See for example in the US: Gazur (2010).
[34] It might be possible that outside investors perceive shareholder loans as some kind of equity because they believe the shareholder will not reclaim his debt in case his company is in crisis. As such, the bankruptcy costs attached to shareholder loans might be lower than those attached to outside credit.

However, when it is more optimal to add debt to the capital structure than equity,[35] and no outside lender is willing to provide credit, the insider might provide it himself. This is maybe the single most important reason why shareholders provide debt to their company.[36] The fact that there are no outside investors for a company of which the net present value of its projects are positive (and high enough compared with a risk free asset),[37] is often because the lender has imperfect information on the quality of the project *ex ante* and on the *ex post* behaviour of the company (see section 5).[38] There is indeed no doubt that some good quality companies cannot attract outside credit at an economically justified price and have to rely on funds from insiders who are less affected by information-asymmetries.[39] This is exactly what Myers and Majluf predict in their famous pecking order theory.[40] Because of the under-pricing of the value of the company by outsiders due to information asymmetries, insiders will provide capital themselves as long as they have the money (*e.g.* with retained earnings) and are risk-neutral.

(ii) Lower transaction costs

Another benefit of debt over equity is transaction costs, something which Modigliani and Miller also assumed away.[41] Equity is in most jurisdictions expensive and time-consuming in the sense that a shareholders' meeting has to be organised, professionals (*e.g.* lawyers, notary public, etc.) have to update the articles of association, pre-emption rights have to be taken into account, etc. Debt can in principle be provided on the spot when company and investor agree, without taking into account all the burdensome corporate rules applicable to equity.

This does not imply that transaction cost associated with debt are low. Certainly for material amounts of credit, the company will have to search for creditors willing to provide debt, sort out the cheapest one and negotiate the contract. So transaction costs to obtain debt will often remain high. However, if the controlling shareholder provides credit himself the transaction costs will be greatly reduced.[42] He does not have to look for himself, negotiations should go smoothly, and often not even a written contract exists. If the company needs financing, the shareholder can instantly wire it from his personal account. Therefore, inside debt is the method of finance with, in principle, the lowest transaction costs. All else being equal, one would expect a company to be financed with 100% inside debt. For example, the popular *cash pooling* arrangements which are in place in many groups are only possible thanks to the low transaction costs associated with inside debt.

The tax shield and the low transaction costs associated with (inside) debt remain standing even if (shareholder) debt is subordinated, therefore those benefits are priority-independent and will not be impacted by a rule of automatic subordination.

4. The agency cost of debt, externalisation and subordination

Given the foregoing, it can sometimes be worthwhile for a controlling shareholder to provide his own company with debt. However, we still don't know how the subordination of shareholder loans can affect company value (or the return for shareholders specifically) as the theories discussed in the previous section are priority-

[35] There is another well known beneficial feature of debt. The interests of managers and shareholders are not aligned and therefore give rise to so-called agency costs of equity (with the managers as the agents of the shareholder-principal). These include (i) the monitoring expenditures by the principal, (ii) the bonding expenditures by the agent, and (iii) the residual loss. According to Jensen and Meckling, debt financing can be used to minimize such costs. Repayment of debt can be legally enforced on maturity while the company cannot be forced to repay equity. By keeping the level of equity as low as possible, the 'free cashflows' the management can spend on its own interests (*e.g.* building a suboptimal corporate 'empire') are limited and his incentives are more aligned with those of the shareholders. As such, agency costs of equity should also be added to the capital structure trade-off. Due to the emotional attachment shareholders often have for their company, a director can speculate that the shareholder will not legally enforce the debt claim he has on his own company, and use the shareholder credit as a free cash flow. Therefore, to discipline management, outside debt is likely better. See Jensen and Meckling (1976); Jensen (1986). In any case, in this article, we assume the interests of managers and shareholders are perfectly aligned because the manager *is* the residual claimant.
[36] See for example Skeel and Krause-Vilmar (2006), p 268.
[37] Ofcourse, such company is assumed not having a debt overhang-problem (see further section 3.2).
[38] This problem is very closely related to the phenomenon of credit rationing. See the seminal article on credit rationing: Stiglitz and Weiss (1981). See also Easterbrook and Fischel (1985) Limited Liability and the Corporation, p 106.
[39] Sometimes the credit rationing problem can be resolved, for example by granting security interests on the assets of the company. See Helsen (2016).
[40] Myers and Majluf (1984).
[41] Transaction costs are most often defined as search and information costs, bargaining and decision costs and policing and enforcement costs. See: Dahlman (1979), pp 147-148.
[42] See Kaplan and Yoder (1981), p 596; Skeel and Krause-Vilmar (2006), p 275; Gazur (2010), p 430.

independent. To understand the priority dependent effects of inside debt, we will add limited liability to the equation.

Limited liability for shareholders is an often praised legal concept.[43] Indeed it has many (economic) advantages compared to a regime of unlimited liability.[44] But limited liability also exacerbates[45] societal costs when the company is run in the interest of the shareholders, who are normally in control, to the detriment of the interests of the creditors.[46] Such 'debtor misconduct' occurs in three main forms, asset dilution, underinvestment and risk alteration.[47] This behaviour is colloquially known as the agency problem of debt, as the debtor misconduct is rooted in the fact that the company is a suboptimal agent of the creditor-principal.

Creditors are in most economic studies assumed not to be naïve and to perfectly adjust their price and the agreement to avoid being a victim of debtor misconduct. This gives rise to agency costs of debt which decrease the return for the shareholders. Indeed, creditors will frequently insist on including covenants and monitor the compliance of the debtor with the agreement to prevent misconduct. Further, the company will make costs to allow the creditor to perform the monitoring in a cost-efficient way (bonding). Bonding acts are for example the provision of financial statements, which can obviously be prepared cheaper by the company then by an outside creditor. Even if the bonding and monitoring expenditures effectively eliminate debtor misconduct, those costs are likely to be non-trivial and therefore constitute a (societal) value loss which the debtor has to incur. In practice, however, bonding and monitoring will only take place to the extent the marginal costs of it are equal to its marginal benefits.[48] Therefore, there remains some room for residual debtor misconduct which creditors will compensate by demanding a higher price, which on its turn will lower the return for the shareholder. In the following sub-sections, I will look into how the subordination of shareholder loans can impact the costs associated with the risk alteration and the underinvestment problem and will have some special attention for non-adjusting creditors. In section 4.4, the problem of asset dilution and subordination of shareholder loans will be discussed briefly.

4.1 Overinvestment

Risk alteration occurs when the company changes its risk profile after having obtained credit. This is in the interest of the shareholders as they, as residual claimants, reap all the benefits of the higher return associated with higher risk, and if things go bad, their loss is limited to what they had invested in the company thanks to limited liability. The creditors claim, to the contrary, is fixed, so they do not benefit from the higher return but still have to bear the higher risk. This way, wealth is transferred from the creditors to the shareholders. As indicated, creditors can anticipate risk alteration by increasing their price. Theoretically, this price increase offsets the value transfer from the debtor to the company, and nobody is worse off. However, if the net present value of the project which the creditors anticipate the company will invest its assets in due to 'debtor misconduct' is less than the market-value of the asset, the gains of the shareholder will be lower and total societal value will be reduced.[49]

[43] Nicholas Murray, president of Columbia University, stated in 1911 that limited liability is 'the greatest single discovery in modern times' (cited by Bainbridge (2001), p 479). In 1926 the Economist wrote that the 'inventors' of limited liability deserved a place in history together with Watt (steam engine) en Stephenson (locomotive) (see Halpern et al. (1980), p 118).
[44] See the classic article on the benefits of limited liability: Easterbrook and Fischel (1985) Limited Liability and the Corporation.
[45] The costs of limited liability exist in every debtor-creditor relation because even a rich natural person has a finite amount of wealth and cannot lose more than that (and benefit from a discharge if things go very wrong). See among others Easterbrook and Fischel (1985) Limited Liability and the Corporation, p 104; Shavell (1986). These costs are, however, exacerbated by limited liability because this legal concept allows persons to separate their assets from their debts. See Hansmann and Squire (2016), p 8.
[46] A company will most likely be run in the interest of the shareholders when the manager of the company owns (a significant stake of) equity or his pay is tied to the value of company's equity. If not, the shareholder-stockholder problem will often be less outspoken. See Kraakman et al. (2017), p 112.
[47] For a more in-depth analysis see amongst others: Smith and Warner (1979), pp 118-119; Kraakman et al. (2017), pp 111-112.
[48] Jensen and Meckling (1976), p 338.
[49] See amongst other Jensen and Meckling (1976), p 336-337; Bradley and Roberts (2015), p 6, footnote 5. For example, assume a company with zero assets and liabilities needs 100 EUR to finance 'project A' which has a 50% chance of generating 150 EUR and a 50% chance of 100 EUR (I ignore the time-value of money). If the creditor is risk-neutral and the risk free rate is 0%, the creditor will charge 100 EUR and the shareholders of the company will gain 25 EUR on average. However, if the creditor knows that there is another 'project B' with a 50% chance of making 220 EUR and a 50% chance of a return of 0 EUR, the creditor will charge 200 EUR as he assumes that the debtor, due to his skewed incentives, will always choose project B because that project generates the highest return for equity. Therefore, the company will have to take on

Risk alteration comes in two forms. Asset substitution and claim dilution. Both can lead to overinvestment, the deployment of assets to undertake un- or less desirable projects than their optimal usage.[50] Asset substitution occurs when the shareholder uses the assets he holds at a certain point in time to pursue a more risky project than the creditor anticipated.[51] Similar in mechanics is claim dilution. Unlike asset substitution, the shareholder does not convert *existing* assets the company holds to increase risk, but takes on *new* liabilities to pursue risky projects.[52] According to the model of Schwartz, debt dilution will happen when a company takes on additional debt unless the funds are used to invest in very profitable projects or in a project which is not risky and uncorrelated with the existing business of the firm.[53] Investment in correlated projects is what in all likelihood most often happens when shareholder loans are provided. They will be used to keep the current project of the company, which needs more funding, alive. Probably therefore, Eidenmüller believes claim dilution caused by shareholder loans is a serious concern.[54]

It is known that the larger the equity cushion of a company is, the less incentivised the shareholder will be to misbehave vis-à-vis creditors.[55] This is because the less 'skin' the shareholder has left in the game, the less he can lose.[56] However, as already noticed by Jensen and Meckling in their seminal 1976 paper,[57] also the fact that the shareholder (manager in their paper) provides debt to his company will incentivise him to act in the interest of the creditors, since he is now 'one of them' and can lose value on his debt claim by pursuing less desirable projects.[58] Notwithstanding both debt and equity dampen misbehaviour, debtholders will be even more risk-averse because only equity has an unlimited upside.[59] The shareholder will therefore exert his influence on the company to prevent dilution of his debt claim.[60] Professor Jackson once famously wrote: 'When a firm is insolvent and has USD 100.000 in debts and only USD 80.000 in assets, it is unlikely that it would be in the interest of the creditors to have that USD 80.000 placed on number 20 at a roulette wheel in Atlantic city, but it clearly would be in the interest of the shareholders to do so.'.[61] Well, if the shareholder held that USD 80.000 as creditor, it is unlikely that he would put it on number 20 unless he is a rather compulsive gambler (and / or extremely rich).[62]

What is then the effect of shareholder loans and their subordination on risk alteration? Under a rule of subordination, the debt claim will be treated as equity from an economical point of view in an insolvency procedure and the shareholder will receive nothing on his debt claim.[63] However, it is important to note that the return on debt is fixed. The subordination does not give the shareholder a right on a higher percentage of the

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project B as project A is not viable with a cost of debt of 200 EUR. However, the average return of project B for the company is only 10 EUR, 15 EUR less than project A. This difference is a residual agency cost of debt (which also constitutes a total social welfare loss) which the debtor has to incur. To the extent the company can, for a price of less than 15 EUR, (through bonding and monitoring) convince the creditor it will take on project A and not B, the total agency costs will be reduced and aggregate social welfare will increase.

[50] It should be noted that the notion overinvestment is in most academic publications reserved for projects which have a negative present value. I will use the term overinvestment for every sub-optimal employement of assets. See for a definition of overinvestment, Hansmann and Squire (2016), footnote 27.

[51] Schwartz (1981), p 11.

[52] Whether or not additional debt hurt creditors depends on what the management does with the new funds. See on this Triantis (1994), pp 2161 et seq.

[53] Schwartz (1989), pp 228-235; Schwartz (1997). Siebrasse writes in this respect aptly: 'If the new debt is used to finance a new project with the same risk characteristics as existing projects, the value of existing debt will be reduced because the payoff to existing debt is not affected in successful states of the world and the claim of old debt is diluted in insolvent states.'. See Siebrasse (1997), p 30.

[54] Eidenmüller (2016), p 19. Outside of shareholder loans, the problem and extent of this form of risk alteration is recognized by amongst other Triantis (1994), p 2166; Kanda and Levmore (1997); Hansmann and Kraakman (2002), p 404; Adler and Triantis (2017), p 567.

[55] See also among others Kraakman et al (2017), p 114. Empirical: Eisdorfer (2008).

[56] Okamoto and Edwards (2010), pp 187 and 197.

[57] See Jensen and Meckling (1976), p 352. For empirical evidence on the dual shareholder-creditor position see: Jiang, Li and Shao (2010). Further with respect to inside-debt held by managers: Sundaram and Yermack (2007); Edmans and Liu (2011); Anantharaman, Fang and Gong (2014); Colonnello, Curatola and Giang Hoang (2017).

[58] This was in the framework of shareholder loans probably first analysed by Engert. See Engert (2004), pp 825-826; Engert (2012), pp 854-855.

[59] Okamoto and Edwards (2010), p 196.

[60] In some cases, holding a large percentage of debt by the manager can lead to inefficient cautiousness. See Sundaram and Yermack (2007). However, it is unlikely that controlling shareholders often hold such large debt claims compared to their residual claim on the company's assets.

[61] Jackson (1986), p 205.

[62] In effect, there is no real leverage in such situation. See Okamoto and Edwards (2010), pp 188-189.

[63] At least to the extent the liabilities of the company exceed the sum of the legal equity and the subordinated shareholder loans.

residual claim on the assets of the company. As such, the risk of the shareholder will increase, but his return will remain the same. Because he will be hit first by risky investments without gaining additional value from it, the shareholder will be more reluctant to guide his company in a risky direction than without subordination.[64] For the same reason, dampening risk-appetite, Tung suggests to reward CEO's of banks with subordinated debt claims on the institution they manage.[65] At the other end of the spectrum, giving the shareholder priority will make him more indifferent to risk, as this risk is born in the first place by others.[66]

Assume a hypothetical limited liability company, controlled by 100% shareholder-manager X, has 1.000 EUR in cash and is owed 1.000 EUR to creditor Y. The company can continue its current project which costs 2.000 EUR or do nothing (or liquidate). In a bull market, the project will generate a return of 500 EUR, in an equally likely bear market 600 EUR of the initial investment will be lost (the time-value of money is ignored). On average the total return of the project is negative, – 50 EUR. If shareholder X provides the funds under the form of equity, his return will be – 50 EUR and he will not pursue the project because he has to internalize the losses.[67] However, if he invests under the form of pro rata debt, his return will be 100 EUR and the undesirable project will be executed.[68] In the latter case, the difference of 150 EUR will be borne by creditor Y and can be considered a 'subsidy' to the shareholders. As the example shows, by providing additional debt instead of equity, a shareholder can dilute the value of the claim of the creditors for his own benefit by altering risk.

If creditors are perfectly adjusting, for example, by integrating in their contracts a mechanism which adjust the remuneration of the creditor in function of the risk taken on by the company, risk alteration would not exist and the company would always take on the project with the highest net present value.[69] If in the example, creditor Y was perfectly adjusting he would have charged an additional 150 EUR to the company, making the project no longer worthwhile for the shareholder and have prevented the dilution of his claim. However, in practice it is almost impossible to include a perfect adjustment mechanism into a contract to protect against risk alteration because not all contingencies can be foreseen. The drafting costs of a covenant which would only approach this goal are in most cases prohibitively expensive.[70] Therefore, even the strongest creditors with debt claims, such as banks, are often not adjusting as their agreement does not foresee in the possibility to change the conditions of the contract afterwards to include additional risk taken upon by the company.[71] For those strong creditors, it is not really a problem that risk is altered as they should be compensated *ex ante* for this by charging a higher fixed price on average.[72]

Next to strong creditors with fixed claims, a second group of non-adjusting creditors consists of tort victims. They cannot, by nature, choose whom to contract with nor bargain for a price incorporating the risk-level of the counterparty. A third non-adjusting creditor is the government. Its claims are established by law without taking capital structure into account.[73] A final group consists of parties which are often considered as weak voluntary players on the market. Like consumers, employees and small suppliers for whom it is sometimes too difficult (*e.g.* because they don't understand the consequences of the concept of limited liability), impossible or

[64] See Eidenmüller (2007), p 56.
[65] Tung (2011), p 1208 and 1229 et seq.
[66] See among others Engert (2004), pp 830 et seq; Skeel and Krause-Vilmar (2006); Engert (2012), pp 851; Halmer (2013), pp 174-175; de Weijs (2016), pp 27-40. For literature on managerial compensation and priority, see Anantharaman, Fang and Gong (2014); Colonnello, Curatola and Giang Hoang (2017).
There is an extensive debate on the economic efficiency of prioritized secured debt. Opponents argue in the first place that secured debt allows to transfer wealth from non-adjusting creditors to shareholders which causes the pursuing of inefficient projects (in the same way as shown in the example in the following paragraph). Proponents argue mainly that secured debt alleviates information-asymmetries between the debtor and the creditors and reduces the costs to monitor debtor misbehaviour. See Zhang (2014) amongst others for an overview of the argumentation. As we assume that the incentives of the manager and shareholder are perfectly aligned, the pro arguments are empty in case the shareholder holds the collateral and only the contra argumentation remains standing. Given that prioritized debt increases the potential to transfer value from non-adjusting creditors, there is under the traditional argumentation no case for secured shareholder loans.
[67] (2500-1000) x 0,5 + (1400-1000) x 0,5 = 950
[68] (2500-1000) x 0,5 + (1000/2000 x 1400 x 0,5) = 1100
[69] See for example, Armour (2000), p 357.
[70] See more detailed on such adjusting mechanisms: Bebchuck and Fried (1996), pp 887-891; Bebchuk and Fried (1997), pp 1301-1304. In this respect see amongst others also Kanda and Levmore (1994), pp 2111-2113; Mann (1997), pp 641 et seq.
[71] The notion of non-adjusting creditors was first introduced by Bebchuk and Fried in their seminal papers on the priority of secured claims. See exhaustive Bebchuk and Fried (1996), pp 881 et seq.; Bebchuk and Fried (1997), pp 1295 et seq. However, before they were called non-adjusting creditors, there existence was already recognized. See for example Schwartz (1981), pp 30-31.
[72] Bebchuk and Fried (1996), pp 886-887 and 894-895; Bebchuk and Fried (1997), pp 1307-1308. For that reason, Squire calls them 'ex-ante adjusters'. See Squire (2011), p 645
[73] Ofcourse, they can raise taxes to offset losses due to debtor misconduct.

financially irrational to check the risk they are exposed to when contracting. Most of them would – for the price paid – not be willing to take more risk on than on a risk-free asset (*e.g.* a German bond). Vis-à-vis them, every higher risk taken on by the company can be considered risk alteration.

Since not all creditors are perfectly adjusting, risk alteration is, as shown in the example above, a societal problem as shareholders take on less desirable projects (whom reduce the total value available to all persons involved with the company)[74] in both the absolute, and the marginal sense.[75] This is a problem for weak non-adjusting creditors as they will always be the victim of risk alteration. This is sometimes a problem for shareholders to the extent the *ex ante* additional price they have to pay to strong creditors (the agency cost of debt) is higher than the value they can transfer. And this should never be a problem for strong creditors as they are in theory always compensated, at least on average. Once the debtor has contracted on fixed terms, the price he has to pay for credit is a sunk cost and he has every incentive to alter risk.[76] The presence of non-adjusting and sunk costs might therefore be an important reason why shareholders provide funds under the form of debt (and not equity) when there are no outside creditors willing to invest and, as such, be a driver of the capital structure of a company.

The cost externalized to non-adjusting creditors can be considered a subsidy. As LoPucki writes: '[…] as with anything that is subsidized, there will tend to be more of it than is economically efficient'.[77] Subordination reduces this subsidy, as it will put the shareholder in the situation he would be in if he had invested under the form of equity and thus force him to internalize the risk.[78] In the above example, the value decreasing project will not be pursued under subordination because this would lead to a negative return of 50 EUR for the shareholder. As such, subordination can prevent overinvestment (and reduces agency costs). This is in line with the model of Gelter which shows that, if at the moment of the investment by the shareholder the assets of the company exceed its liabilities, subordination will prevent a number of inefficient rescue attempts. All other things equal, the return on the project for the shareholder will be lower due to subordination and under a certain threshold no longer worthwhile pursuing without the subsidy.[79] Further, no efficient projects will be deterred since such projects generate by nature a return high enough to compensate both shareholders as well as creditors and subordination does not change this.[80] However, not all undesirable investments by shareholders will be deterred by subordination because the benefits of the project for the shareholder can still be high enough without the subsidy from the non-adjusting creditors (see further below).[81]

As such, subordination of shareholder loans in companies with positive net equity is not a perfect rule as not all undesirable projects are deterred, but it is Kaldor-Hicks positive because at least some are prevented without deterring good projects. This assumes that the shareholders are risk-neutral. If they are risk-averse, the subsidy in a situation without subordination might be necessary to stimulate them to provide debt to undertake a desirable project. However, as will be explained below, this will likely not be a problem, at least not when the company is in distress, since entrepreneurs are often overconfident and unwilling to give up previous investments.[82]

Of course not only shareholder loans can cause risk alteration, but any debt, whatever the source, insider or not, can.[83] This is because the cost of credit will go down (and the shareholders will pocket this reduction in price) if

[74] See in this respect also: Cantlie (1994), pp 419-421.
[75] The marginal sense refers to a comparison with the return on a risk-free asset (*e.g.* German bond). See Zhang (2014), pp 798-799.
[76] Ofcourse, this is too blunt. A company who wants to stay in business for a long term wil have much difficulty to attract new creditors if it has a history of risk alteration. However, for a company in distress, risk alteration is likely a strategy which is in the interest of the shareholders.
[77] LoPucki (1994), p 1921.
[78] This is not a novel idea. It is long known from tort law & economics that forcing the tortfeasor to internalize the costs of the tort committed leads to an optimal allocation of resources. See (including references) LoPucki (1994), p 1901.
[79] Gelter (2006), 486. However, this rationale for subordination can already be found back with Long: Long (1993), p 133. Bebchuk and Fried come to the same findings when applying the model to security interests. See Bebchuk and Fried (1996), pp 917-921; Bebchuk and Fried (1997), pp 1328 et seq. See also f (1994), p 2156; Kanda and Levmore (1994), pp 2111 et seq.; LoPucki (1994), pp 1909 et seq. However, critical (against Bebchuk and Fried): Harris and Mooney (1997), pp 1361 et seq; Carlson (1998), pp 1694 et seq.
[80] Gelter (2006), p 487.
[81] See also Kanda and Levmore (1994), pp 2111-2112 (stating that a priority without collateral cannot prevent all claim dilution).
[82] See section 4.3.
[83] See Skeel and Krause-Vilmar (2006), p 274.

adjusting creditors can rely on the cushion provided by non-adjusting creditors.[84] As such, if (even perfectly priced) outside debt can be attracted, subordination of shareholder loans will not have a positive impact on the problem of overinvestment. Therefore, to prevent claim dilution, priority for initial over later lenders, the so-called first-in-time rule has – with many nuances undiscussed here – been proposed by prominent academics.[85] After all, subsequent investors are in a much better position to price risk as they perfectly know the state of the company. To prevent asset substitution (and also claim dilution), a (super)priority for at least one category of non-adjusting creditors, tort victims, has been proposed in the past.[86] Theoretically, as long as the entrepreneur can substitute financial contracts which rank below the claims of non-adjusting creditors (*e.g.* equity or subordinated debt) with equal or higher ranking contracts, he will have an incentive to take excessive risk. However, one should recall that, in the situation where the company is in distress and no outside credit can be attracted, the subordination of inside debt can prevent the execution of undesirable projects. Why I do not think a first-in-time or priority for non-adjusting creditors is feasible, but subordination of shareholder loans is, will be discussed in more depth in section 4.3.

In order to show how subordination can curb overinvestment I have deliberately omitted, as rightly observed by Mülbert, that subordination can increase the tendency of the debtor to alter risk to the detriment of non-adjusting creditors.[87] In the analysis until now, I have assumed that the shareholder only has two options. Go for the undesirable project or take on a riskless option for the creditor (*e.g.* do nothing or liquidate). In such case subordination of shareholder loans will indeed reduce the gap between the incentives of the shareholders and the creditors because the creditors can only win. However, if I add a third possible project to the equation, one can see that under certain circumstances the subordination of shareholder loans can increase the losses for non-adjusting creditors and society.[88]

To show this, I build further on my previous example. Assume that the company owned by X has a second possible project which it can choose from (apart from doing nothing) and which costs also 2.000 EUR. The pay-off structure goes as follows. In a good state, the company will earn 1.150 EUR, in a bad state everything will be lost. The return of this project is - 425 EUR on average, which is far worse than in the previous example, which generated a loss of only -50 EUR. This project will be pursued by the shareholder even if his investment of 1.000 EUR is a subordinated loan or equity because, with or without subordination, the return of the shareholder will be 75 EUR.[89] As such, under subordination, the shareholder will always choose the second example as his return is 75 EUR, while in the first example his return when subordinated is – 50 EUR. However, without subordination of his loan, the shareholder will take on the first example since his return is 100 EUR, higher than the 75 EUR he earns on the second example. Subordination therefore incentivises the shareholder to take on the least desirable project.[90] In economic terms, the increase of the cost of capital because non-adjusting creditors are more fairly remunerated drives the debtor to more value-shifting projects. In vulgar language, if you don't let me steal a little piece of your cake, I will steal the whole cake.

Given this example and without empirical evidence on the available investment opportunities to companies, it is impossible to determine whether subordination of shareholder loans will decrease or increase debtor misconduct under the form of risk alteration. Taken at face value, the consequences of a potential risk increase due to a reduction of the subsidy from non-adjusting creditors goes further. Much theorising on internalization of externalities developed in the past decades becomes obliterate since internalization can lead to more externalities. If the subordination of shareholder loans exacerbates overinvestment, this would likely also be the case for a general first-in-time rule, a (super)priority for tort victims and a reduced priority for secured credit.[91] Hence, even unlimited liability for shareholders, a mechanism widely accepted to force the debtor to internalize

[84] If in the above example the required debt of 1.000 EUR is provided by an outside adjusting creditor, the price for such debt will be 300 EUR. The return for the shareholder will remain the same: (2500-2300) x 0.5+0=100. The adjusting creditor will not suffer: 1300 x 0,5 + (1000/2000 x 1400 x 0,5) = 0. While the non-adjusting creditor will bear the losses: (1000 x 0,5) + (1000/2000 x 1400 x 0,5) = - 150.
[85] Most importantly by Schwartz (1989). Also by Kanda and Levmore (1994). See already Fama and Miller (1972), p 152.
[86] The majority of scholars is pro. See for example Leebron (1991), 1643 et seq.; LoPucki (1994); Price (1995); X (2005). Against (with nuances) a priority for tort victims: Block-Lieb (1989), pp 1994-1997; Listokin (2008); Zhang (2014), pp 821-822 and p 827).
[87] Mülbert (2006), pp 398-399.
[88] See also Gelter (2006), p 492 (who recognizes that even if the company is not yet overindebted, subordination might yield negative results for society).
[89] (3150-1000) x 0,5 + 0 = 1075
[90] For a more formaly analysis, see Halmer (2013), pp 103 et seq. Similar but with respect to secured credit, see Zhang (2014), pp 815 et seq. See also relating to forced deleveraging and risk-increase Okamoto and Edwards (2010), pp 188 et seq. and 199.
[91] Zhang (2014), pp 827-828.

costs, could exacerbate costs.[92] But maybe most disturbing for corporate dogmatics, this means that it is not certain that the subordinated position of equity is the most efficient default rule. Under certain variables, priority for equityholders might be better for society, another hit for the beleaguered legal capital doctrine![93]

However, I do not believe that the increase in rank of non-adjusting creditors leads on average to more externalities.[94] More research on this point is needed, but it is likely that, as Mülbert also observes, the risk appetite of shareholders might play a role.[95] In my example, the shareholder can earn under a rule of subordination earn 75 EUR by taking on the project in the second example which is disastrous for the (non-adjusting) creditors. However, to earn this 75 EUR, 'the cold-blooded gambler who takes conscious advantage of the asymmetric pay off profiles',[96] takes a 50 % chance that his initial investment of 1.000 EUR will totally evaporate. If the shareholder is sufficiently risk-averse he will not pursue this risky project.[97] It is known that most human beings are risk-averse concerning larger portions of their (material and immaterial) wealth and there is not much reason to assume why entrepreneurs are less risk-averse than others.[98] Therefore, unless the loan is trivial for the entrepreneur compared with his total personal wealth, he will probably be risk-averse. Secondly, in theory, any company can indeed sell of all its assets and go to the casino with the proceeds. I believe that in reality the portfolio of investment opportunities of many companies which are in financial distress, and are therefore prone to debtor misconduct, will be much more limited. Liquidate the firm, or give the activities they did before another shot, will often be the only realistic set of opportunities.[99] As we will see in section 4.3, shareholders who have invested a lot of money, reputation and time in a specific project will not readily shift to another project just because this is economically the most interesting thing to do for them. The existence of the sunk cost fallacy has to be taken into account. It is, in exaggeration, unlikely that a bakery in distress will sell of its assets and start day-trading with the proceeds. The baker will keep on baking or liquidate. Indeed, some empirical evidence seems to suggest that real risk shifting in the form of substitution of assets to riskier ones, does not take place.[100] But in all likelihood, the continuation of existing projects with new funds takes often place. In such case, subordination can help sort out undesirable continuations.

Bottom line, it is most likely that the subordination of shareholder loans reduces and not increases overinvestment. This is in the absence of evidence and strong arguments to the contrary also the assumption for the rest of the article.

But there is yet another (agency and societal) problem which has been left out of the equation until now and is exacerbated when subsidisation is eliminated through subordination. The underinvestment or debt overhang problem famously described by Myers.[101]

4.2 Underinvestment

While the problem of risk alteration is that the company does not invest its assets in the most desirable project, underinvestment, to the contrary, leads to the passing up of socially desirable projects by a company. When a limited liability company is overindebted, it shareholder will be less motivated to undertake a new project with net positive value, or will take on much riskier projects (overinvestment), as any benefits of it will first accrue to the existing creditors.[102]

Assume a hypothetical limited liability company, controlled by 100% shareholder-manager X, has 900 EUR in cash and is owed 1.000 EUR to creditor Y. The company can realize a project which costs 1.500 EUR. In a bull market, the project will generate a return of 200 EUR, in a bear market 100 EUR of the initial investment will be lost (the time-value of money is ignored). On average the total return of the project is positive, 50 EUR. If shareholder X provides the necessary funds of 600 EUR under the form of equity, his return will be – 50 EUR and he will not pursue the project.[103] However, if he invests under the form of debt, his return will be 12,5 EUR

[92] Halpern, et al. (1980), pp 145-147; Menell (1986), pp 990-992; Blumberg (1986), pp 616 et seq.; Hansmann and Kraakman (1990); Leebron (1991).
[93] For criticism on the legal capital doctrine, see, amongst others: Armour (2000); Enriques and Macey (2001).
[94] Halmer comes to the same conclusion for a company in a financial crisis. See Halmer (2013), pp 103 et seq.
[95] Mülbert (2006), p 399.
[96] Citation comes from Okamoto and Edwards (2010), p 200.
[97] For a more in depth explanation on risk aversion, see Okamoto and Edwards (2010), pp 193-196.
[98] See Parker (2009), pp 121-124
[99] This is also implied by Adler, who finds that 'continuation itself' may constitute overinvestment. See Adler (1995), pp 597 and 606.
[100] See Kraakman et al. (2017), footnote 9.
[101] Myers (1977).
[102] See for a more exhaustive explanation of underinvestment Miglo (2016), pp 97 et seq.
[103] (1700-1000) x 0,5 + (1400-1000) x 0,5 = 550

and the project will be executed.[104] In this case, the 'subsidy' transferred from the outside creditor to the shareholder of 62,5 EUR makes the project possible. If subordinated, the shareholder will not pursue this desirable project because his return will – like in case of the equity investment – drop to – 50 EUR.[105] In effect, the shareholder will under a regime of subordination have to pay a prohibitive tax to the outside creditors to pursue a value increasing project.

This example shows that in some cases, the subordination of shareholder loans might prevent desirable projects from taking place because they exacerbate the underinvestment problem.[106] Something the German literature calls the *Sanierungsfeindlichkeit* of the automatic subordination of shareholder loans.[107] Indeed, the subordination prevents shareholders from participating in the increase of the value of the company debt. This is probably the main argument against subordination of shareholder loans.[108] Again, this is also an argument against a general first-in-time priority, a priority for tort creditors and, last but not least, the subordinated position of equity (and the function of legal capital in general). Also for this reason, Easterbrook and Fischel imply that control should be taken away from the shareholders once their residual claim goes under water (*i.e.* the company becomes overindebted).[109] In such case, the 'new' residual claimants, most often unsecured creditors, should take control and will decide to pursue the desirable project because they benefit in the first place from it.

In any case, the subordination of shareholder loans is likely efficient at the first moment in the life cycle of a limited liability company when shareholder loans often will come into play, the start-up phase. This is because at the foundation of the company, there is no debt overhang problem since the equity (even in jurisdictions without minimum capital) should be at least something symbolic and there are, in principle, no debts. As such, due to subordination no positive net present value projects will be passed up by the shareholder and at least some un- or less desirable projects will be deterred.[110] At the start-up phase, the problem of overinvestment is often more outspoken as the equity buffer is lower on average and there is no or limited access to professional debt (without collateral or a personal guarantee).The shareholder therefore must rely on friends, family and fools and other uninformed, weak or irrational creditors who do not price risk enough. If the shareholder invests the necessary balance of funds himself under the form of debt in a jurisdiction without subordination, he can extract extra value from those outside creditors.

The second time in the company's life cycle when shareholder debt often comes into play since no person is any more willing to provide credit at a reasonable price, and (earlier) outside creditors are in need of protection, is when the company becomes financially distressed. In such case the underinvestment problem can play a role and prevent desirable projects because positive externalities will be conferred upon outside creditors which are not internalized by the subordinated shareholder.

Bottom line, the subordination of shareholder loans is a two-edged sword. On the one hand, it can prevent some un- or less desirable activities ('overinvestment'), on the other hand it can deter some desirable projects ('underinvestment'). The other side of the coin is that not subordinating shareholder loans (or even giving them priority) can exacerbate the overinvestment problem while reducing the underinvestment problem.[111] If this is all we can say about subordination, the discussion does not matter anymore from a theoretical economic point of view,[112] and we might as well subordinate shareholder loans because this is perceived *ex post* as more 'fair', at least against weak creditors. It is indeed impossible to know without empirical data on the specific projects financed with shareholder loans whether or not subordination generates net social gains or losses.[113] It is

[104] (1700-1000) x 0,5 + (600/1600) x 1400 x 0,5 = 612,5
[105] See for other examples of underinvestment: Bratton (2006), pp 47-48.
[106] Gelter (2006), pp 489-490. See with respect to secured debt but similar Stulz and Johnson (1985), pp 515-518; Triantis (1992), pp 248-249; Triantis (1994), p 2156; Kanda and Levmore (1994), pp 2114 et seq.; Bebchuk and Fried (1996), pp 919-920; Bebchuk and Fried (1997), pp 1333-1334; Zhang (2014), pp 836-837.
[107] Engert (2012), pp 855-857.
[108] See footnote 16.
[109] Easterbrook and Fischel (1991), p 69. See also Jackson and Scott (1989), p 193.
[110] See Gelter (2006).
[111] This two-sided effect is noticed by among others Berkovitch and Kim (1990); Kanda and Levmore (1994); Adler (1995), p 599; Skeel and Krause-Vilmar (2006), p 272; Hackbarth and Mauer (2012); Jungherr and Schott (2017).
[112] Engert comes more or less to this conclusion. See Engert (2012), p 857.
[113] Berkovitch and Kim come to the following conclusion based on their model: 'In general, we believe that most cases fall in intermediate categories in which neither the me-first nor the me-last rule is optimal.'. As such, they believe the over- and underinvestment incentives (at least under informational asymmetry) cancel each other out and probably believe therefore there is no optimal priority rule. See Berkovitch and Kim (1990).

therefore unsurprisingly that Adler and Triantis call the over- and underinvestment trade-off in general: 'the fundamental and perhaps most vexing challenge of priority allocation'.[114] Reflecting this sentiment in the context of the subordination of shareholder loans the latest version of the widely acclaimed 'The Anatomy of Corporate Law' states: 'The rationale is to deter overinvestment in distressed firms, but such doctrines [*i.e.* the subordination of shareholder loans] must walk a tightrope between deterring this and permitting controlling shareholders to make legitimate efforts to rescue failing firms through the injection of new debt capital.'.[115]

Notwithstanding, in the next section I will argue why it is unlikely that in case of the subordination of shareholder loans the costs of the underinvestment problem will outweigh the benefits generated by the deterrence of excessive risk-taking.

4.3 The (not so) difficult balance between over- and underinvestment

The only known model which tries to solve the opposing effects of overinvestment caused by risk alteration (debt dilution) and underinvestment through the ranking of claims is provided by Kanda and Levmore.[116] They propose that, in general,[117] earlier lenders should have a priority over later debt claims to reduce the overinvestment incentive (this is in effect the first-in-time rule mentioned above).[118] However, with respect to the assets of the project undertaken with the newly invested funds, and only those assets, the later lender should have priority to alleviate the debt overhang.[119] This way, the lender will be forced to ascertain that the debtor shall undertake a project with the new funds injected with at least a positive net present value as he will bear the costs if the funds are used to pursue a loss-making project. This is because the lender has no longer a cushion of earlier money which 'forgives' overlending as he is subordinated on all other assets of the company vis-à-vis early lenders. Of course, it is often impossible to trace profits and losses from invested funds back to a certain project. As an attempt to substitute, the lawmaker should give later lenders priority only to certain assets which more or less constitute an isolated project which *ex ante* is more often than not socially desirable.[120]

To illustrate their theory, Kanda and Levmore explain the existence of the superpriority (above earlier liens) of a salvor who rescues a vessel in distress. The payment to be made to the salvor will not increase the risk of the debtor and dilute the claims as they are by definition spent on saving the vessel, without, there is nothing left for the earlier creditors. As such, there is no doubt that earlier creditors would agree, if they could hypothetically bargain *ex ante*, to allow the salvor to share at the very least pro rata, or even have priority on, the proceeds of the sale of the vessel and its cargo.[121] Furthermore, the salvor will only undertake the rescue-attempt to the extent the value of the vessel and the cargo is worth more than the resources (including the risk) he has to invest in the salvage operation as he only has a priority on those assets.[122] Therefore, only socially desirable rescue attempts will be undertaken.[123]

As such, later shareholder loans should be subordinated to earlier creditors unless it is relatively sure the newly invested resources by the shareholder will be used for desirable projects. Indeed, there is no objection that shareholders share *pari passu*, or even have priority, on assets acquired by new resources which have improved the total company value. If the law can distinguish between bad and good projects (and subordinate respectively give priority to the shareholder-creditor who made the project possible), all the better. If the shareholder saves a vessel owned by his company (assuming he has no legal obligation to save the vessel anyhow, *e.g.* as manager), it is difficult to object that he can share pro rata or with priority on efficiency grounds.

The theory of Kanda and Levmore also implies that, in principle, shareholders should benefit from a higher rank vis-à-vis later lenders to prevent their claim from being diluted. Under a rule of automatic subordination, all shareholder loans are subordinated whatever the moment in time the claim arose. However, a debt claim of a (100%) shareholder cannot be diluted, and if it's diluted, it is his own fault because he controls the company.

In a recent elaborate study, based on empirical data, Jungherr and Schott come to the conclusion that in general debt dilution is much more significant for firm value than debt overhang. Even more, debt overhang is beneficial since it reduces debt dilution. However, they let secured credit (*i.e.* priorities) out of the equation. See Jungherr and Schott (2017).

[114] Adler and Triantis (2017), p 568.

[115] Kraakman et al. (2017), p 132.

[116] Berkovitch and Kim, however, make a similar argument: Berkovitch and Kim (1990).

[117] See for the general subordination of later lenders: Kanda and Levmore (1994), pp 2121-2129.

[118] See already Smith and Warner (1979), p 127 and pp 136-137.

[119] A priority for later debt can alleviate the underinvestment problem. See already early: Stulz and Johnson (1985).

[120] Kanda and Levmore (1994), pp 2115-2116.

[121] *Id.*, pp 2118-2121.

[122] Admittedly, often in an emergency situation, this assessement will be rather crude. As such, I assume that no lives are in danger, only the vessel and its cargo.

[123] I make abstraction of the environmental externalities which some vessels can cause when they go down.

Above, I have showed that the wealth transferred from earlier creditors by entering into new debt accrues to the shareholders of the company in his capacity as shareholder. Therefore, what the shareholder loses as creditor due to claim dilution, he will gain as shareholder. As the first-in-time rule protects against claim dilution and shareholders cannot be diluted, shareholders, in general, do not need to share pro rata or with priority. As such, the subordination of shareholder loans not only protects later creditors against risk alteration, but also earlier creditors against asset substitution.

Notwithstanding specific priorities can maybe abate the underinvestment problem, it is impossible for the lawmaker to draft them so precisely that they can single out all profitable projects and eradicate the underinvestment problem.[124] As already indicated above, shareholder loans will often be used to continue the existing operations of a company which is no longer able to attract outside debt. As will be discussed more in-depth below, it is very questionable that such project is on average welfare-increasing and is worthy of receiving equal, or even less, a priority rank on insolvency.

Secondly, debt overhang in a world where it is easy to incorporate limited liability companies and the shareholder has personal wealth left should not be exaggerated from a societal welfare point of view.[125] If the shareholder is 'out of the money', the most obvious way – at least for him – to solve the underinvestment problem is to incorporate a new legal entity to exploit the project. Instead of paying a 'tax' on his capital injection to the existing creditors of the company, the shareholder will now fully enjoy the profits of the new project and will therefore be incentivised to execute it, which effectively enables the investment opportunity which would otherwise have been foregone.[126] The decision whether or not to set up a new company does, at least in a world without transaction costs (*e.g.* to incorporate the new company), not depend on whether or not the shareholder is subordinated. From the moment he suffers from a debt overhang, he will set up the new company.[127] Admittedly, sometimes this solution will not be possible because the shareholder is not wealthy enough to both (i) grant the necessary new capital (*e.g.* under the form of a shareholder loan) for the possible new project, and/or (ii) buy from the existing company the assets which are necessary to execute such project.[128] If that happens, subordination of shareholder loans might be economically detrimental.

Thirdly, there are other ways to resolve the debt overhang problem. Renegotiation, already touched upon by Myers in his seminal work on underinvestment, might solve it.[129] The company creditors can accept a reduction of their claim in order to make the investment for the shareholder worthwhile.[130] It is likely that lenders would agree to such arrangement in order to receive more on a reduced claim then nothing or less on a nominal higher claim. This is the main reason why Bebchuk and Fried – in the context of security interests – assess that 'partial priority is not as likely to prevent the financing of value-increasing projects as it is likely to prevent the financing of value-decreasing projects', however, this reasoning applies in every over- and underinvestment

[124] If the law cannot *ex ante* distinguish good from bad projects, it could be argued that it should allow the courts to judge this *ex post.* As such, it is sometimes argued that wrongful trading rules are much better equipped to deter undesirable activities than subordination. See in this respect Eidenmüller (2016), p 19. And indeed it is difficult to argue against the efficiency of director's liability for overinvestment in a world with perfect information. However, in practice, it is impossible to accurately determine without hindsight the net present value of the majority of projects undertaken by now-bankrupt companies. See for example Skeel and Krause-Vilmar (2006), p 271. Furthermore, subjecting corporate decisions to increased scrunity by courts *ex post* might be value reducing given the fact that this will likely deter directors from undertaking desirable but risky projects *ex ante*. Finally, burdening the courts with this would generate significant societal costs just because of the increased workload for the courts. See also Hansmann and Kraakman (1990), pp 1928-1929; Kraakman et al. (2017), p 70. Specifically with respect to the priority trade-off: Adler and Triantis (2017), p 568; Long (1993), p 134. And even if an *ex post* review by the courts would be feasible, this is still not an argument why the default rule should be *pari passu* and not subordination.

[125] Ofcourse, without limited liability in the first place, the debt overhang problem would not exist since any positive net present value project accrues to the ultimate (risk-neutral) shareholder-natural person by a reduction of his debts (if his wealth is negative). But then one would do away with the benefits of limited liability, so this is not considered. Anyhow, as a debt discharge for bankrupted natural persons exists, the underinvestment problem will certainly also occur with natural persons.

[126] Berkovitch and Kim (1990), footnote 6; Triantis (2000), p 49; Hansmann and Squire (2016), pp 7-8.

[127] As such the agency costs of underinvestment *ex ante* imposed by strong creditors on the company will remain the same (and society as a whole will suffer from this). However, *ex post* at least the desirable projects are pursued so the societal loss due to underinvestment is reduced.

[128] Indeed, it is often seen in practice that a company goes bankrupt and the shareholder with personal wealth left buys the 'good' assets out of the estate making use of a new legal entity to pursue further activity. This behaviour might feel immoral, but can in some cases alleviate the social costs generated due to the underinvestment problem and therefore be efficient.

[129] Myers (1977), p 158.

[130] See similar: Long (1993), footnote 136.

trade-off.[131] Of course, renegotiation outside of bankruptcy will not always be feasible because the existence of high transaction costs and especially the hold-out behaviour of some creditors.[132] A formal bankruptcy reorganization might solve some problems associated with informal negotiations, but is also not without costs.[133] Those costs might prevent an efficient solution to the underinvestment problem.

A fourth argument why the debt overhang problem should be put into perspective is that underinvestment is only a loss for society when the profitable project is not picked up by someone else.[134] Since many of them are, the underinvestment problem is likely less serious than it appears at first sight.

If I believe overinvestment is a bigger problem than underinvestment,[135] why only subordinate shareholder loans? Why not impose a priority for non-adjusting creditors over adjusting creditors as already touched upon above? This would force the debtor, through increased cost of credit, to internalize all costs and prevent negative present value projects. This solution might be feasible for at least one readily visible group of non-adjusting creditors, tort victims. If tort creditors were the only non-adjusting creditors, given them priority would make the subordination of shareholder loans redundant. And indeed, in some jurisdictions tort victims enjoy priority, and I think this is a good thing.[136] However, as indicated above, tort victims are not the only group non-adjusting creditors. Tort claimants can rather easily be told apart from other creditors, but it is practically impossible or very costly to distinguish between adjusting and voluntary non-adjusting creditors. Making this even more difficult is the fact that the group of 'real' adjusting creditors – those who do not contract on fixed terms – is probably very small.[137] Giving only priority to tort victims would insulate those claimants from externalization, but would not decrease the distortions caused by the existence of other non-adjusting creditors.[138] On the other hand, distinguishing shareholder debt from other debt is more feasible and a general subordination of shareholder loans will cover all non-adjusting creditors. Of course, subordinating shareholder debt would be imperfect because debt provided by outside creditors would still facilitate value transfers. However, it would at least help in the critical moment when no outside lenders are willing to provide credit. A less drastic rule of first-in-time (which only reduces claim dilution, not asset substitution) might be more feasible, but would also cause practical difficulties of its own. As Hansmann and Kraakman observe, a first-in-time rule would be very difficult because this would necessitate the determination of the relative dates of claims.[139] Apart from those practical considerations relating to the imposition of a priority for non-adjusting creditors and a first-in-time rule, subordination of shareholder loans is just politically much more realistic because this would not imply an overhaul of the existing insolvency regime.

Furthermore, there is another intuitive reason why overinvestment is likely a bigger problem than underinvestment in the specific case of shareholder loans. It can be questioned whether shareholder-managers of companies (i) in which no outsiders are willing to invest, and (ii) which have made substantial losses in the past (the cause of the current debt overhang), should be encouraged to invest further in the company. This is maybe something tricky to consider, but in my view, Long writes not without any legitimacy: '[…] if the company is experiencing financial difficulty, there is *prima facie* evidence that the company's directors and officers have not handled the company's financial resources very well. We should be hesitant in wanting the company to receive an infusion of new money, regardless of the source, if doing so is merely to send good money after bad.'.[140] It is possible that the shareholder-manager is talented enough, had some bad luck, and outsiders are due to information asymmetries or the debt overhang no longer willing to invest in the company. But it is also possible that he is pursuing value-decreasing projects which is recognized by outside investors, but not by the entrepreneur himself.

Indeed, it is accepted that entrepreneurs, and especially when they have suffered losses, are often the victim of cognitive biases and therefore are not the embodiment of the rational *homo economicus*. First of all, it is known

[131] Bebchuck and Fried (1997), p 1335.
[132] Adler and Triantis (2017), pp 568-570.
[133] For example, reputational costs, salaries of the different actors, value might be lost because the formal procedure takes too long, etc.
[134] Bratton (2006), p 7.
[135] This believe is also shared by Adler. See Adler (1995), p 604.
[136] For example: Article 125 *Ley Concursal* (Spain); Article 19 *Hypotheekwet* (Belgium).
[137] Squire also believes the group of 'ex post adjusters' is relatively small. See Squire (2011), p 646.
[138] Bebchuk and Fried (1996), pp 907-908.
[139] Another reason might be that foreclosure often takes place outside of bankruptcy in a procedure to which earlier creditors are not part. See Hansmann and Kraakman (2002), footnote 63.
[140] Long (1993), p 100. See similar Adler (1995), p 603.

that people are in general excessively optimistic about their own chances of success.[141] In one research, 81% of entrepreneurs believed the chance of success of their business was 70%, while 33% believed it was 100%. In reality 75% fails within 5 years.[142] When the company is in a downwards spiral (and debt overhang becomes more of an issue) the decisions of the manager-shareholder are further affected by loss aversion. The 'pain' suffered due to losses is worse than the happiness created by a profit. The entrepreneur does not want his company to go bankrupt because he will have to incur, amongst others, a loss in reputation, loss of resources invested (time, money,…), etc. This concept is closely related to another cognitive bias, the escalation of commitment or sunk cost fallacy. Past investments (or 'sunk costs') should not influence the current decision whether or not to invest new funds. However, people, and especially entrepreneurs, have severe difficulty to concede earlier investments were in vain and therefore keep on pouring funds in loss-making projects.[143] These systemic biases reduce the likelihood that the shareholder-manager, in the absence of outside investors, will refrain from investing in his company due to a debt overhang problem and will increase the overinvestment problem.[144] Prior to the reform of the corporate law in Germany in 2008 ('MoMiG'), shareholder loans were only subordinated if they were provided when the company was in crisis.[145] An economic rationale for this rule might be that in a distressed company the shareholder-manager will more often than not pursue undesirable projects due to overconfidence, loss aversion and escalation of commitment.[146] Therefore the shareholder should be deterred from prolonging the life of the company through subordination of his loans.[147] As outside investors do not suffer from the loss-aversion and escalation of commitment biases, the likelihood that they will take irrational undesirable decisions is lower. Maybe for this reason, German law foresees in an exception to the automatic subordination of the loans of a new shareholder-creditor if he acquired shares with the purpose of overcoming a company crisis.[148] If the subordination of shareholder loans deters and drives companies into bankruptcy, this might – notwithstanding the costs of bankruptcy and the information advantage of the shareholder-manager – be beneficial. It is not unlikely that the bankruptcy procedure – with its involvement of specialized actors – is better placed to filter out inefficient firms (and solve the debt overhang problem if the company is efficient) than the 'biased' shareholder-manager.[149]

In the context of the less than perfectly rational investor, one should finally also consider that, to have a deterrent effect, the existence of the rule should be known by the shareholder. Claussen observe that not all corporate insiders are aware of the possibility of subordination in Germany.[150] The same is possible, according to Clark, if automatic subordination would be introduced in the United States.[151] This observation is far from unlikely in case of smaller closed corporations – which are undoubtly often financed with shareholder debt, without access to specialized legal advice. Then, the sword of subordination would again be double-edged. It would deter overinvestment nor underinvestment. However, if that is the case, there is no preferable rule from an economic point of view, and shareholders could be subordinated since this is perceived as more 'fair' *ex post*.

Finally, I wish to stress that I do not stand alone with the observation that the 'liability' of shareholders should

[141] This was already recognized by Adam Smith 'The overweening conceit which the greater part of men have of their own abilities is an ancient evil remarked by the philosophers and moralists of all ages. Their absurd presumption in their own good fortune has been less taken notice of. It is, however, if possible, still more universal. There is no man living who, when in tolerable health and spirits, has not some share of it. The chance of gain is by every man more or less overvalued, and the chance of loss is by most men undervalued, and by scarce any man, who is in tolerable health and spirits, valued more than it is worth.'. See Smith (1776), p 88. This was later established in many experiments. See Lichtenstein, Fischoff and Phillips (1982).
[142] See Cooper, Woo and Dunkelberg (1988).
[143] McCarthy, Schoorman and Cooper (1993). Also recognized in the context of shareholder loans by Skeel and Krause-Vilmar (2006), p 272.
[144] It is well known that CEO overconfidence decreases the debt overhang problem. See among others: Hackbart (2009); Subramanian, Harikumar and Ali (2017). Mülbert also writes in the context of shareholder loans that subordination is unlikely to be an effective deterrent. See Mülbert (2006), p 398.
[145] See amongst others Cahn (2006).
[146] An outright prohibition of financing distressed companies would, ofcourse, for arguments not elaborated on in this article, go much too far.
[147] This was one of the reasons Landers believes subordination is warranted. See Landers (1976), p 536.
[148] See article 39(4) *Insolvenzordnung*.
New shareholders are indeed less likely to invest in projects which are in no one's, including themselves, interest. But there is no reason to assume that they are less inclined to overinvest and dilute outside creditors if it is in their own interest.
[149] Skeel and Krause-Vilmar (2006), p 273.
[150] Claussen writes: 'Wenn sie aus dem Rechtsleben davon hören, geht es ihnen wie dem Bibelleser, der die Umqualifizierung von Wasser in Wein im Johannes-Evangelium Kap. 2 Vers 1 als das begreift, was es ist – nämlich als ein Wunder. Wunder aber geschehen nicht im Kaufmannsleben, nicht in der Betriebswirtschaft, auch nicht im Wirtschaftsrecht'. See Claussen (1992), p 152.
[151] Clark (1977), footnote 91.

be increased to fight overinvestment. Many, if not all scholars, even its most ardent adherents, publishing on limited liability criticize the concept because of its potential to externalize costs to non-adjusting creditors.[152] Therefore, some authors suggest to impose unlimited (pro rata) liability on shareholders (or at least parent companies) for claims of non-adjusting (most often only tort) creditors.[153] This would indeed significantly reduce wealth transfers, however, this would also most likely exacerbate underinvestment in case the firm suffers from a debt overhang. Something nobody seems to take into account.[154] This strengthens my intuitive feeling that underinvestment is a bigger problem. To come to the conclusion that a form of unlimited liability is beneficial, it has to be traded-off with the benefits of limited liability. This must not be done under a rule of subordination. Most of the advantages of limited liability boil obviously down to the fact that unlimited liability can cripple even the wealthiest of persons. Under a rule of subordination, shareholders would still know their financial exposure precisely, namely the companies' equity increased with their debt claim on it. None of the benefits of limited liability would therefore be impacted. Applying this rationale, the subordination of shareholder claims can only be beneficial since it at least mitigates some negative effects of limited liability (*i.e.* overinvestment), albeit less effective than unlimited liability.[155]

There is, apart from the theoretical framework I presented above, indeed some limited empirical evidence that subordinated inside debt decreases the agency cost of debt. Based on a sample of 1462 loans, Anantharaman, Fang and Gong find that loan spreads are lower when inside debt held by CEO's can only be withdrawn after the claims of outside creditors are paid. Granted, the research is performed outside of a formal insolvency procedure, but still, I believe their findings are relevant to a certain extent.[156]

4.4 Asset Dilution

Another possible explanation why shareholders and creditors agree on subordination is because it can reduce the agency cost of debt known in the literature under the name 'asset dilution. Asset dilution occurs when assets are siphoned from the company without adequate compensation, which for obvious reasons harms creditors if they are not on the receiving end of the transaction.[157] As observed by Clark in a seminal article, such behaviour can be mitigated in some cases by the subordination of insider debt.[158] For example, in the famous and founding equitable subordination case of the American Supreme Court known as 'Deep Rock', the claims of the parent company were subordinated because the court deemed them to arise from transactions which were not at arm's length, such as an unfair lease, excessive management fees, very high interest rates on advances and dividends paid when the company was in distress.[159] To the extent such claims are not repaid prior to bankruptcy, thanks to subordination, outside creditors will not be hurt by this unfair dealing. However, without a rule forbidding payment of insider claims in the period leading up to bankruptcy, the controlling shareholder might try to dodge subordination if the company has liquid assets left.[160] In any case, unfair transactions with insiders can often also be undone under fraudulent conveyance law,[161] however outright subordination will avoid discussions and legal proceedings and might therefore be more efficient. If creditors believe that subordination reduces the potential of shareholders to siphon assets out of the company, the agency cost of debt will go down and the

[152] Landers (1975); Posner (1976), pp 519-520; Easterbrook and Fischer (1985) Limited Liability and the Corporation, 107; Kraakman et al. (2017), pp 115-116; (see also following footnote). This is even recognized by Bainbridge, one of the champions of limited liability: Bainbridge and Henderson (2016), pp 81-83. Most often only tort victims are considered, as many authors assume all other creditors are 'voluntary'. As already elaborated on, this reduction to tort victims is not correct as the incentive of the shareholders to pursue undersirable projects will exist even with strong voluntary creditors, as long as their claims are fixed.

[153] Halpern, et al. (1980), pp 145-147; Menell (1986), pp 990-992; Blumberg (1986), pp 616 et seq.; Hansmann and Kraakman (1990); Leebron (1991).

[154] This is also the case for the proponents and opponents of a tort (super)priority. See footnote 87. None of them seem to take underinvestment into account when looking deeper into the costs of such priority.

[155] This is expressly recognized by: Hansmann and Kraakman (1990), footnote 93. Leebron also finds that a priority for tort victims over other creditors, unlike unlimited liability, does not impact the benefits of limited liability while it forces the debtor to internalize tort costs. See Leebron (1991), pp 1643 et seq. See also Price (1995), pp 464-465.

[156] See Anantharaman, Fang and Gong (2014). Further, Colonnello, Curatola and Giang Hoang also state that seniority is the most important element of inside debt in order to reduce the debtor-bondholder conflict. See Colonnello, Curatola and Giang Hoang (2017), p 429.

[157] Bratton (2006), p 7; Kraakman et al. (2017), p 111.

[158] Clark (1977).

[159] Supreme Court of the United States 27 February 1939 (Taylor et al. v. Standard Gas & Electric Company et al.), *United States Reports Volume 306*, 307.

[160] Maybe for that reason, article §139 of the German *Insolvenzordnung* allows to declare void any transaction which consists of the repayment of a shareholder loan in the year leading up to insolvency. See Mülbert (2006), p 397.

[161] For example, in the US, a creditor can make invoke the fault-based equitable subordination doctrine, which is closely related to fraudulent conveyance law, to attack unfair transactions.

shareholder will earn more. To the extent this reduced price allows companies to undertake more desirable projects, society as a whole profits.[162] As a bonus, less wealth will be transferred away from weak creditors.

5. Risk allocation

In the previous section, it has been explained how the subordination of shareholder loans can impact the incentives of the shareholder-manager to misbehave. In this section, it will be shown that allocating the highest risk to shareholders might also be for other reasons efficient.

If we do away with the possibility of debtor misconduct, the existence of different forms of financial contracts within a firm, such as common stock, preference shares, subordinated debt, and secured debt might, to a certain extent, be explained by recognizing that not all investors have exactly the same risk-appetite. Risk-averse persons will demand a premium to bear high risk and will disproportionally reduce their price in return for lower risk. By selling high-risk financial contracts to more risk-seeking persons and low risk contracts to risk-averse persons, the total cost of capital of a firm will go down.[163] There is much discussion in the academic literature on who is the best risk bearer, the company creditor or the shareholder.[164] It is unlikely that the undiversified entrepreneur who puts most often a rather large stake of his personal wealth and human capital in his company is a good risk-bearer.[165] This would predict no subordination of shareholder loans, at least not vis-à-vis institutional creditors with well-diversified portfolios. On the other hand, there are also company creditors with an undiversified portfolio, like employees who can only work for one employer. Vis-à-vis those creditors, the entrepreneur might be better placed to bear risk. Because there is a heterogeneity of risk-aversion and possibility to diversify, it is impossible to know whether or not on average the shareholder-manager is a better or a worse risk-bearer. Further, as we will see in section 6, contrary to what risk-aversion should predict, institutional creditors demand subordination while undiversified company creditors do not. So it is unlikely that risk-aversion is the most important explanation why an entrepreneur should hold the most risky investment. As such, for reasons of risk-aversion, there is no case for automatic subordination.

Likely a better reason why higher risk is allocated to insiders is information asymmetry.[166] Outside creditors undervalue securities issued by a company because they have imperfect and less information than insiders on the quality of the company. Such information asymmetry between outsiders and insiders can theoretically lead to increased cost of capital or even a total evaporation of the financial markets.[167] Therefore, as already indicated above in section 3, the pecking order theory predicts that insiders who hold a qualitative company – and if they are risk neutral and have the money – will always finance their company themselves (with personal wealth or retained earnings) because outsiders undervalue the company.[168] However, companies can overcome this problem by 'signalling' their quality to outside investors.[169] A way to signal quality is the willingness of insiders to invest in their firm.[170] If entrepreneurs are risk-averse, the fact that they - notwithstanding their undiversified portfolio - are willing to invest in their company signals that the entrepreneur knows that his company is a good risk.[171] Without any doubt, holding equity will be a better signal than holding debt, as equity is more risky.[172] But holding long-term subordinated debt might be the best signal, as it is as risky as equity while its upside is not unlimited (see section 3.1).[173] Therefore, if a shareholder wants to send a strong signal of

[162] Squire (2009), pp 820-821.
[163] Schwartz (1981), pp 22-23. Jackson and Scott (1989), p 165.
The allocation of risk corporate finance theories have been attacked in the academic literature. See amongst others Schwartz (1981), pp 22 et seq.; Schwartz (1984), pp 1062 et seq.; Carlson (1998), pp 1667 et seq.; Triantis (1992), pp 227-228.
[164] See Cheng (2014), pp 154 et seq.
[165] The fact that entrepreneurs have no diversified portfolio would predict that they receive a higher return from their investment. Data suggests, however, that in reality, the entrepreneur does not get that premium. Therefore, the unknown incentive for entrepreneurs to disproportionally invest in their own company is sometimes called the 'private equity premium puzzle'. Several reasons why they do are suggested in the academic literature, including overoptimism. See amongst others Moskowitz and Vissing-Jorgensen (2002).
[166] See with respect to shareholder loans already Posner (1976), p 518.
[167] See for an example on the debt market: Leland and Pyle (1977), p 371. Which is nothing more than an application of the famous lemons-problem of Akkerlof. See Akerlof (1970).
[168] Myers and Majluf (1984).
[169] The seminal article on signalling is of Spence: Michael Spence (1973). Another method to combat information asymmetries is screening. See for the standard work on screening: Stiglitz (1975). A well-known signal is the distribution of dividends. The seminal work on dividends and signalling is: Bhattacharya (1979).
[170] Leland and Pyle (1977). In this respect, the guarantee or pledge of personal assets by the shareholder also acts as a signal. See Berger and Udell (1998).
[171] Harris and Raviv (1991), pp 313-314. See also Mankowski (2006), pp 407-408.
[172] See Seppa (2010), p 148; Seppa (2014), p 178. See also Long (1993), p 124 and 130.
[173] Tung (2011), p 1245.

quality of his project, he should invest under the form of equity, or even better, (maybe perpetual) subordinated debt.

Information-asymmetry can concern the pay-off structure of a certain project or firm, but it can also relate to the *ex post* (*i.e.* after the granting of the credit) behaviour of the borrower as the creditor does not know how inclined the borrower is to engage in debtor misconduct. As shown in section 4.1 and 4.4, subordination of shareholder loans can dampen debtor misconduct and reduce the agency cost of debt. But apart from this, in general, allocating the highest risk to the insider can reduce the monitoring costs. The less risky a financial contract is, the less the holder of it will have to monitor the debtor to prevent misconduct.[174] As such, it is efficient to allocate the highest risk to the best monitor. Monitoring costs for the shareholder-manager do not exist because he is for all purposes the borrower himself. So his monitoring costs will not increase because his claim is subordinated. As such, monitoring theory predicts that the entrepreneur, if he is not wealthy enough to finance the whole enterprise himself, should hold the most risky financial contract which requires the most monitoring.[175]

In my opinion, probably the most important reason why shareholders should hold the riskiest financial contract is, under the assumption no debtor misconduct will take place and no information asymmetry exists, because of the heterogeneous expectations of default. The higher an investor perceives the chance of default, the higher his price will be. As such, it is efficient to assign the financial contract with the lowest risk to the least optimistic investor.[176] As indicated above, entrepreneurs are often excessively optimistic about the viability of their business while institutional lenders will often be sceptical. In both case, the total cost of capital will go down if the entrepreneur takes on the most risky financial contract.[177]

6. Some observations in the real world and the hypothetical bargain

Given that (i) the entrepreneur can better signal the quality of his project to outsiders if his investment is subordinated, (ii) subordination reduces the total monitoring costs, (iii) subordination reduces the cost of credit by allocating the most risk to the most optimistic investor, (iv) subordination in all likelihood reduces overinvestment and only marginally increases underinvestment, and (v) it is unsure whether on average the entrepreneur is more risk-averse than other creditors, it is likely that the subordination of the financial investment of an insider is most of the times efficient.

In line with this prediction, we observe that the majority of the financial commitment of entrepreneurs to their company is subordinated, being equity.[178] Further, in the experience of a number of corporate finance practitioners I have spoken to, it is very common, if not the rule, that if such claims exist, major shareholders will subordinate their (current and future) debt to institutional lenders in the framework of a larger financing operation.[179] If such arrangement would be inefficient, one would expect entrepreneurs to substitute equity for

[174] For an application to secured credit, see Bebchuk and Fried (1996), p 915; Zhang (2014), pp 806-808.
[175] Maybe it makes sense to quote Adler and Triantis in this context in extenso: 'Consider a debtor with two creditors, where the debtor faces a choice between leaving the creditors holding the same priority against its assets and giving priority to one creditor (the "senior" creditor) over the other. If the two creditors are consensual and identical in every way, then the saving in interest payable to the senior creditor will be offset by the increase that would be demanded by the junior creditor, who would bear a greater risk of default. The pie would simply be sliced differently, and the creditors would adjust their compensation to their allocated share. However, if the junior creditor has superior information that allows it to screen, monitor or enforce its debt claim at a lower cost than the senior creditor, then the junior creditor could bear the risk of default more cheaply than the senior creditor. So, the aggregate cost of capital would be reduced by the differential priority; the amount of pie to be distributed would be greater.'. See Adler and Triantis (2017), p 566.
[176] Schwartz (1981), pp 27; Holcombe and Saba (1984).
This idea is to a certain extent related to the famous 'pecking order' theory of Myers and Majluf. They argue that if investers value a company less than the insiders due to information asymmetries, less risky securities should be issued to those outsiders because such securities have lower information costs. See Myers and Majluf (1984).
[177] In effect, I posit that shareholders are certain enough of the succes of the company to subordinate their claim on the company's assets, but not certain enough to expose themselves to unlimited liability. When making this trade-off, one should also take into account the specific benefits of limited liability which in addition speak on its behalf. See footnote 45.
[178] According to an authorative research by Berger and Udell of small businesses in the United States, 31,33 % of the balance sheets of their sample consists of equity provided by the principal owner, while the principal owner only holds 4,10 % of the balance sheet in debt claims. See Berger and Udell (1998), p 620.
[179] It should be noted that in practice shareholders only subordinate their claims to the party they are explicitely contracting with. Other (weak) creditors do not benefit from the subordination agreement. Which in effect means that the liquidation dividend of the shareholder in his capacity as creditor only flows to the counterparty. This is a win-win situation for the shareholder. Vis-à-vis strong creditors, the price which the shareholder has to pay is reduced. From the weak creditors who do not impose agency costs, the shareholder can still transfer wealth and as such the tendency to invest in sub-optimal projects will remain. As explained by de Weijs, this even leads to the counterintuitive situation in which strong creditors

non-subordinated debt. This does not happen. Ofcourse, we appreciate that there are probably also priority-independent benefits of equity which cannot be replicated in a debt contract.[180] But we see that the most sophisticated lenders, being banks, are pushing entrepreneurs to increase their equity cushion in return for obtaining funds. And the only reason I can see why banks would require equity is because of its subordination.

It is of course possible that when an entrepreneur provides non-subordinated debt to his company he does this because, in the specific case at hand, it is more socially desirable to provide a higher ranked investment. For example when outside creditors are less risk-averse, extreme risk alteration is possible or underinvestment is a great risk. Much more likely, the entrepreneur wants to (i) benefit from the priority-independent benefits of (inside) debt (*i.e.* lower transactions costs and tax shield, see section 2), and / or (ii) transfer wealth from non-adjusting creditors.

If those are the reasons why insiders provide non-subordinated debt, one should expect the parties to conventionally subordinate shareholder loans. However, the default rule which says shareholder debt is not subordinated, is sticky. Indeed, if transaction costs (*e.g.* lawyer fees, negotiation time, etc.) are zero, parties will just bargain for the most optimal arrangement.[181] But transaction costs exist and it is known that it is much more costly to alter a default rule than to preserve it.[182] In most cases, the cost to reverse the default rule and subordinate shareholder loans is prohibitively high and therefore, it does not take place. As we observe in practice, however, if the deal is substantial enough and the costs to subordinate are more trivial, shareholder loans will be subordinated – even vis-à-vis parties which are much less risk-averse than entrepreneurs.

One of the most important normative theories within the contract law domain from an economic perspective is that the law should reflect what the (assumingly sophisticated) parties to the contract would have, hypothetically, bargained for *ex ante* in the absence of transaction costs.[183] By providing such terms as default provisions to the contracting parties, the lawgiver can minimize the transaction costs and as such increase efficiency. Of course, the ideal terms of contracting are not the same for all parties. Therefore, the lawmaker should adopt the default which the majority of parties would have adopted. Hence the hypothetical bargain theory is also called the majoritarian default. Sometimes, corporations are viewed as a nexus of contracts and the relation between shareholders and creditors is – at least from an economical point - considered to be contractual.[184] Given that, in my opinion, more often than not shareholders and creditors would agree to subordinate the debt claims of the shareholder because this is the most optimal arrangement for all parties. Therefore, as a general principle, automatic subordination of shareholder loans should be the default.[185]

7. Conclusion

Based on descriptive economic theory, I have shown that the subsidy provided by non-adjusting creditors if the shareholder invests under the form of debt will most likely lead to the more undesirable employment of assets of a limited liability company. On the other hand there are several reasons to assume underinvestment will not be a problem in case shareholder loans are subordinated and therefore such rule is only *Sanierungsfeindlich* to a limited extent, contrary to what is often assumed. Furthermore, entrepreneurs are better risk-bearer because they have the lowest monitoring costs, are the least affected by information asymmetries and have the highest expectation of success.

Shareholders provide non-subordinated debt to their company mainly because of the priority-independent benefits of debt and since this allows them to transfer wealth from non-adjusting creditors. In the absence of transaction costs, which are in reality high because of the established default rule, there is not much doubt that

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prefer subordinated debt financing by shareholders as they have to share capital contributions with other creditors in insolvency. See de Weijs (2016), footnote 16.

[180] It might be possible to replicate some priority-independent benefits of equity. For example, bankruptcy costs can be mitigated to a certain extent without equity by issuing perpetual debt. A typical priority-independent "benefit" of equity which cannot be easily replicated by a debt contract is voting rights. In many jurisdictions, voting rights can only be obtained through a (subordinated) contribution.

[181] Coase (1960).

[182] Milton (2007), pp 1318 et seq.; Cheng (2014), p 119; Bainbridge (2016), p 55.

[183] Ofcourse with many – justified – nuances. See instructional: Ayres and Gertner (1989). The view that the hypothetical bargain is wealth-maximizing is also present in the economic analysis of corporate law. Prominent advocates are Easterbrook and Fischel. They write in their famous book on the economics of corporate law: 'The normative thesis of the book is that corporate law should contain the terms people would have negotiated, were the costs of negotiating at arm's length for every contingency sufficiently low. The positive thesis is that corporate law almost always conforms to this model.'. See Easterbrook and Fischel (1991), p 34.

[184] Pathbreaking: Jensen and Meckling (1976), pp 310-311.

[185] See similar: de Weijs (2016), p 34.

parties would agree on the subordination of shareholder loans in most cases.

The main flaw of this article is it does not provide any empirical data, only some observations and theory. The net positive effect of the subordination of shareholder loans remains to be empirically demonstrated. In the absence of such data I have tried to shift the burden of proof to non-believers of subordination.[186] And it is a heavy burden, as proving the opposite would likely lead to a conclusion that the subordinated position of equity– and in particular the existence of legal capital – is undesirable.

[186] In this respect, Bratton and McCahery write aptly: "In an ideal world, inquiry into the efficiency of a legal regime would require the collection and analysis of empirical information concerning costs and benefits. But, due to cost constraints and limits on available means of measurement, fact studies are the exception rather than the rule in law and economics. Instead, legal policy debates respecting efficiency usually deploy economic theories in the absence of determinative empirical evidence. Efficiency emerges as presumption, not as fact. Absent data on costs and benefits, legal policy debates must be resolved by allocating an empirical burden of proof, with the party bearing the burden losing the debate. Participants in such debates draw on the behavioral predictions of economic theory as they search for ways to assure that the burden rests on their opponents' shoulders." See Bratton and McCahery (1997), p 630.

8. References

Adler B (1995) Re-Examination of Near-Bankruptcy Investment Incentives. The University of Chicago Law Review 62:575-606

Adler B, Triantis G (2017) Debt Priority and Options in Bankruptcy: A Policy Intervention. American Bankruptcy Law Journal 91:563-592

Akerlof G (1970) The Market for 'Lemons': Quality Uncertainty and the Market Mechanism. The Quarterly Journal of Economics 84:488-500

Anantharaman D, Fang V, Gong G (2014) Inside Debt and the Design of Corporate Debt Contracts. Management Science 60:1260-1280

Armour J (2000) Share Capital and Creditor Protection: Efficient Rules for a Modem Company Law. The Modern Law Review 63:355-378

Ayres I, Gertner R (1989) Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules. Yale Law Journal 99:87-130

Bachmann G et al. (2014) Regulating the Closed Corporation, ECFR Special Volume 4, De Gruyter, Berlin

Bainbridge S (2001) Abolishing Veil Piercing. The Journal of Corporation Law 26:479-535

Bainbridge S (2002) Corporation Law and Economics. Foundation Press, New York.

Bainbridge S, Henderson T (2016) Limited Liability: A Legal and Economic Analysis. Edward Elgar, Cheltenham

Bebchuk L, Fried J (1996) The Uneasy Case for the Priority of Secured Claims in Bankruptcy. Yale L.J.:857-934

Bebchuk L, Fried J (1997) The Uneasy Case for the Priority of Secured Claims in Bankruptcy: Further Thoughts and a Reply to Critics. Cornell Law Review 82:1279-1348

Beck S (2006) Kritik des Eigenkapitalersatzrechts. Peter Lang, Frankfurt am Main

Berger A, Udell G (1998), The Economics of Small Business Finance: The Roles of Private Equity and Debt Markets in the Financial Growth Cycle. Journal of Banking and Finance 22:613-673

Berkovitch E, Kim H (1990) Financial Contracting and Leverage Induced Over- and Under-Investment Incentives. Journal of Finance 45:765-794

Bezzenberger T (2000) Kapitalersetzende Gesellschafterdarlehen im Recht der GmbH. In Westermann H, Mock K (eds.), Festschrift für Gerold Bezzenberger zum 70. Geburstag. de Gruyter, pp 23-58

Bhattacharya S (1979) Imperfect Information, dividend policy, and 'the bird in the hand' fallacy. The Bell Journal of Economics 10:259-270

Blazy R, Petey J, Weill L (2014) Can Bankruptcy Codes Create Value? Evidence from Creditors' Recoveries in France, Germany, and the United Kingdom. Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2447296

Block-Lieb S (1989) The Unsecured Creditor's Bargain: a Reply. Virginia Law Review 80:1989-2019

Blumberg P (1986) Limited Liability and Corporate Groups. J. Corp. L. 11: 573-631

Bradley M, Roberts M (2015) The Structure and Pricing of Corporate Debt Covenants. Quarterly Journal of Finance Vol 5 No 2:1-37

Bratton W (2006) Bond Covenants and Creditor Protection: Economics and Law, Theory and Practice, Substance and Process. EBOR:39-87

Bratton W, McCahery J (1997) An Inquiry into the Efficiency of the Limited Liability Company: Of Theory of the Firm and Regulatory Competition. Washington & Lee Law Review 54:629-686

Brealy R, Myers S (2011) Principles of Corporate Finance. McGraw-Hill/Irwin, New York

Bris A, Welch I, Zhu N (2006) The Costs of Bankruptcy: Chapter 7 Liquidation versus Chapter 11 Reorganization. The Journal of Finance:1253-1303

Cahn A (2006) Equitable Subordination of Shareholder Loans? EBOR:287-300

Cantlie S (1994) Preferred Priority in Bankruptcy. In Ziegel J, Cantlie S (eds.) Current Developments in International and Comparative Corporate Insolvency Law, Clarendon Press, Oxford: 413-450

Carlson D (1998) Secured Lending as a Zero Sum Game. Cardozo Law Review:1635-1741

Cheng T (2014) An Economic Analysis of Limited Shareholder Liability in Contractual Claims. Berkeley Business Law Journal 11:113-181

Clark R (1977) The Duties of the Corporate Debtor to its Creditors. Harvard Law Review:505-562

Claussen C (1992) Betriebswirtschaft und Kapitalersatzrecht. In Moxter A et al. (eds.), Rehnungslegung, Entwicklungen bei der Bilanzierung und Prüfung von Kapitalgesellschaften, Festschrift zum 65. Geburstag von Professor Dr. Dr. H.c. Karl-Heinz Forster, IDW-Verlag, Düsseldorf

Claussen C (1996) Die GmbH braucht eine Deregulierung des Kapitalersatzrechts. GmbH-Rundschau 87:316-327

Clemens P (2012) Das neue Recht der Gesellschafterfremdfinanzierung nach dem MoMiG. Carl Heymanns Verlag, Köln

Coase R (1960) The Problem of Social Cost. The Journal of Law & Economics 3:1-44

Coleman J (1980) Efficiency, Utility, and Wealth Maximization. Hofstra Law Review 8:509-551

Colonnello S, Curatola G, Giang Hoang N (2017) Direct and indirect risk-taking incentives of inside debt. Journal of Corporate Finance 45:428-466

Cooper A, Woo C, Dunkelberg W (1988) Entrepreneurs' Perceived Chances for Success. Journal of Business Venturing: 97-108

Dahlman C, (1979) The Problem of Externality. Journal of Law & Economics 22:141-162

de Weijs R (2016) Wanorde? Hoe het Faillissementsrecht zich tegen schuldeisers dreigt te keren. Boomjuridisch, Den Haag (translated into English and retrievable on https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2932097)

Drukarczyk J (1995) Gesellschafterdarlehen, Rechtsprechungsgrundsätze des BGH und § 32a GmbHG – Einige kritische Anmerkungen. In Elschen R et al. (eds.), Unternehmenstheorie und Besteuerung. Festschrift zum 60. Geburstag von

Dieter Schneider. Gabler, Wiesbaden, pp 171-202
Dworkin R (1980) Is Wealth a Value?, The Journal of Legal Studies 9:191-226
Easterbrook F, Fischel D (1985) Closed Corporations and Agency Costs. Stanford Law Review 38:271-301
Easterbrook F, Fischel D, (1985) Limited Liability and the Corporation. University of Chicago Law Review: 89-117
Easterbrook F, Fischel D (1991) The Economic Structure of Corporate Law. Harvard University Press, Cambridge
Edmans A, Liu Q (2011) Inside Debt. Review of Finance 15:75-102
Eidenmüller H (2007) Gesellschafterdarlehen in der Insolvenz. In Heldrich A et al. (eds.), Festschrift für Claus-Wilhelm Canaris zum 70. Geburstag, vol 2. Beck, München, pp 49-70
Eidenmüller H (2016) Comparative Corporate Insolvency Law ECGI Law Working Paper No. 319/2016. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2799863. Accessed 12 October 2017
Eisdorfer A (2008) Empirical Evidence of Risk Shifting in Financially Distressed Firms. The Journal of Finance 63:609-637
Engert A (2004) Die ökonomische Begründung der Grundsätze ordnungsgemäßer Unternehmensfinanzierung. ZGR:813-841
Engert A (2006) Discussion Report. EBOR:353-356
Engert A (2012) Drohende Subordination als Schranke einer Unternehmenskontrolle durch Kreditgeber. ZGR:835-874
Enriques L, Macey J (2001) Creditors versus capital formation: The case against the European legal capital rules. Cornell Law Review: 1165-1204
Fama E, Miller M (1972) The Theory of Finance. Dryden Press, Hinsdale
Fenell L, McAdams R (2016) The Distributive Deficit in Law and Economics. Minnesota Law Review 100:1051-1129
Finch V (2009) Corporate Insolvency Law: Perspectives and Principles. Cambridge University Press, Cambridge
Fischer T (1996) Gläubigerschutz durch eigenkapitalersetzende Gesellschafterdarlehen? Eine ökonomische Analyse. In Sadowski D, Czap H, Wächter H (eds.), Regulierung und Unternehmenspolitik, Methoden und Ergebnisseder betriebwirtschaftlichen Rechtsanalyse. Gabler, Wiesbaden, pp 179-196
Gazur W (2010) An Arm's Length Solution to the Shareholder Loan Tax Puzzle. Seton Hall Law Review 40:407-465
Gelter M (2006) The subordination of shareholder loans in bankruptcy. International Review of Law and Economics:478-502
Gelter M, Roth J (2007) Subordination of Shareholder Loans from a Legal and Economic Perspective. Journal for Institutional Comparisons 45:40-47
Götz A (2001) Juristische und ökonomische Analyse des Eigenkapitalersatzrechts. Nomos, Baden-Baden
Hackbart D (2009) Determinants of corporate borrowing: A behavioral perspective. Journal of Corporate Finance 15:389-411
Hackbarth D, Mauer D (2012) Optimal Priority Structure, Capital Structure, and Investment. The Review of Financial Studies25:747-796
Halmer D (2013) Gesellschafterdarlehen und Haftungsdurchgriff in Schriften zum Unternehmens- und Kapitalmarktrecht. Mohr Siebeck, Tübingen
Halpern P et al. (1980) An Economic Analysis of Limited Liability in Corporation Law. The University of Toronto Law Journal 30:117-150
Harris M, Raviv A (1991) The Theory of Capital Structure. The Journal of Finance 46:297-355
Harris S, Mooney C (1997) Measuring the Social Costs and Benefits Identifying the Victims of Subordinating Security Interests in Bankruptcy. Cornell Law Review 82:1349-1372
Hansmann H, Kraakman R (1990) Toward Unlimited Shareholder Liability for Corporate Torts. The Yale Law Journal 100:1879-1934
Hansmann H, Kraakman R (2002) Property, Contract, and Verification: The Numerus Clausus Problem and the Divisibility of Rights. The Journal of Legal Studies 31:373-420
Hansmann H, Squire R (2016) External and Internal Asset Partitioning: Corporations and their Subsidiaries. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2733862, Accessed 21 November 2017
Helsen F (2016) Adverse Selection and Moral Hazard in the Credit Market: Using Security Interests to Reduce Credit Rationing. Unpublished Doctoral Thesis, Catholic University of Leuven.
Henckel W, Gerhardt W (2004) Jaeger Insolvenzordnung: Grosskommentar, vol 1. De Gruyter Recht, Berlin
Hewer M (2013) Essays in the Economic Analysis of Corporate and Public Law. http://hss.ulb.uni-bonn.de/2013/3245/3245.pdf
High Level Group of Company Law Experts (2002) Final Report on a Modern Regulatory Framework for Company Law in Europe. http://www.ecgi.org/publications/documents/report_en.pdf
Holcombe R, Saba R (1984) The Effects of Heterogeneous Expectations on the Capital Structure of the Firm. Southern Economic Journal 51:356-368
Jackson T (1986) The Logic and Limits of Bankruptcy Law, Harvard University Press, Cambridge
Jackson T, Scott R (1989) On the Nature of Bankruptcy: an Essay on Bankruptcy Sharing and the Creditors Bargain. Virginia Law Review 75:155-2014
Jensen M, Meckling W (1976) Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. Journal of Financial Economics:305-360
Jensen M (1986) Agency Costs of Free Cash Flow, Corporate Finance, and Takeover. The American Economic Review 76:323-329
Jiang W, Li K, Shao P (2010) When Shareholders are Creditors: Effects of the Simultaneous Holding of Equity and Debt by Non-commercial Banking Institutions. The Review of Financial Studies 23:3595-3637
Jungherr J, Schott I (2017) Debt Dilution and Debt Overhang. Barcelona GSE Working Paper, https://www.barcelonagse.eu/research/working-papers/debt-dilution-and-debt-overhang
Kanda H, Levmore S (1994) Explaining Creditor Priorities. Virginia Law Review 80:2103-2154
Kaplan R, Yoder L (1981) New Variations on an Old Enigma: The Treasury Department's Debt-Equity Regulations.

University of Ilinois Law Review:567-623
Kaplow L, Shavell S (2002) Fairness versus Welfare, Cambridge. Harvard University Press, Harvard.
Kaplow L, Shavell S (1994) Why the Legal System is Less Efficient than the Income Tax in Redistributing Income. The Journal of Legal Studies 23:667-681
Klaus H (1994) Gesellschafterfremdfinanzierung und Eigenkapitalersatzrecht bei der Aktiengesellschaft under der GmbH. Peter Lang, Frankfurt am Main
Kraakman R et al. (2017) The Anatomy of Corporate Law. OUP, Oxford
Kranzusch P, Icks A (2009) Die Quoten der Insolvenzgläubiger in Regel- und Insolvenzplanverfahren. IfM-Materialien, Institut für Mittelstandsforschung, Bonn
Kraus A, Litzenberger R (1973) A State-Preference Model of Optimal Financial Leverage. Journal of Finance 28:911-922A.
Kronman A (1980) Wealth Maximization as a Normative Principle. The Journal of Legal Studies 9:227-242
Landers J (1975) A Unified Approach to Parent, Subsidiary, and Affiliate Questions in Bankruptcy. The University of Chicago Law Review 42:589-652
Lander J (1976) Another Word on Parents, Subsidiaries and Affiliates in Bankruptcy. The University of Chicago Law Review 43:527-540
Leland H, Pyle D (1977) Information Asymmetries, Financial Structure, and Financial Intermediation. The Journal of Finance 32:371-387
Leebron D (1991) Limited Liability, Tort Victims, and Creditors. Columbia Law Review 91:1565-1650
Long L (1993) Automatic subordination as incentive for insider creditors'prudential investing'. Journal of Law and Commerce 13:92-142
LoPucki L (1994) The Unsecured Creditor's Bargain. Virginia Law Review 80:1887-1965
Lichtenstein S, Fischoff B, Phillips L (1982) Calibration of Probabilities: The State of the Art to 1980. In Kahneman et al (eds.), Judgment Under Uncertainty: Heuristics and Biases. Cambridge University Press, Cambrigde, 306-334.
Listokin Y (2008) Is Secured Debt Used to Redistribute Value from Tort Claimants in Bankruptcy? An Empirical Analysis. Duke Law Journal 57: 1037-1079
Mankowski P (2006) Does contract suffice to protect the creditors of a company and their interest. In Lutter M (ed.), Legal capital in Europe. ECFR Special Volume 1, pp 394-410
Mann J (1997) Explaining the Pattern of Secured Debt. Harvard Law Review 110:625-683
McCarthy A, Schoorman F, Cooper A (1993) Reinvestment Decisions by Entrepreneurs: Rational Decision-Making or Escalation of Commitment? Journal of Business Venturing 8:9-24
Menell P (1986) Liability of Parent Corporations for Hazardous Waste Cleanup and Damages. Harvard Law Review 99:986-1003
Miglo A (2016) Capital Structure in the Modern World. Palgrave Macmillan
Milton D (2007) Piercing the Corporate Veil, Financial Responsibility, and the Limits of Limited Liability. Emory Law Journal 56:1305-1382
Moringiello J (2011) Mortgage Modification, Equitable Subordination, and the Honest but Unfortunate Creditor. Fordham Law Review 79:1599-1642
Modigliani F, Miller, M (1958) The Cost of Capital, Corporation Finance, and the Theory of Investment. American Economic Review 48:261-297
Moskowitz T, Vissing-Jorgensen A, (2002) The Returns to Entrepreneurial Investment: A Private Equity Premium Puzzle. The American Economic Review 92: 745-778
Mülbert P. (2006) A Synthetic View of Different Concepts of Creditor Protection, or: A High-Level Framework for Corporate Creditor Protection. EBOR:357-408
Myers S (1977) Determinants of Corporate Borrowing. Journal of Financial Economics 5:147-175
Myers S, Majluf N (1984) Corporate financing and investment decision when firms have information that investors do not have. Journal of Financial Economics 13:187-221
Okamoto K, Edwards D (2010) Risk Taking. Cardozo Law Review 32:159-224
Parker S (2009) The Economics of Entrepreneurship. Cambridge University Press, Cambridge
Posner R (1976) The Rights of Creditors of Affiliated Corporations. University of Chicago Law Review 45:499-526
Posner R (1979) Utilitarianism, Economics, and Legal Theory. The Journal of Legal Studies 8:103-140
Price A (1995) Tort Creditor Superpriority and Other Proposed Solutions to Corporate Limited Liability and the Problem of Externalities. George Mason Law Review 2:439-476
Rickford J (2004) Reforming Capital: Report of the interdisciplinary group on capital maintenance. EBLR:919-1027
Röth J (2009) Sanierungsdarlehen. Helbing Lichtenhahn Verlag, Basel
Schröder J (2012) Die Reform des Eigenkapitalersatzrechts durch das MoMiG. RWS Verlag, Köln
Schwartz A (1981) Security Interests and Bankruptcy Priorities: A Review of Current Theories. 10 J. Legal Stud. 10:1-37
Schwartz A (1984) The Continuing Puzzle of Secured Debt. Vanderbilt Law Review: 1051-1069
Schwartz A (1989) A Theory of Loan Priorities. The Journal of Legal Studies: 209-261
Schwartz A (1997) Priority Contracts and Priority in Bankruptcy. Cornell Law Review 82:1396-1419
Seppa R (2010) Implication of Inside-Debt Among Small- and Medium-Size Enterprises. International Research Journal of Finance and Economics 44:148-160
Seppa R (2014) Implication of Inside-Debt: Signaling for Bankruptcy Probabilities Within Small Firms. Baltic Journal of Management 9:168-188
Shavell S (1986) The Judgment Proof Problem. International Review of Law and Economics 6:45-58
Skeel D, Krause-Vilmar, G (2006) Recharacterization and the Non-Hindrance of Creditors. EBOR:259-285
Smith, A (1776) An Inquiry into the Nature and Causes of the Wealth of Nations, http://www.ibiblio.org/ml/libri/s/SmithA_WealthNations_p.pdf

Smith C, Warner J (1979) On Financial Contracting: An Analysis of Bond Covenants. Journal of Financial Economics 7:117-161
Spence M (1973) Job Market Signalling. Quarterly Journal of Economics 87:355-374
Siebrasse N (1997) A Review of Secured Lending Theory. https://www.researchgate.net/publication/237830835_A_Review_of_Secured_Lending_Theory
Stiglitz J (1975) 'The Theory of 'Screening,' Education, and the Distribution of Income. The American Economic Review 65:283-300
Stiglitz J, Weiss A (1981) Credit Rationing in Markets with Imperfect Information. The American Economic Review 71:393-410
Stulz R, Johnson H (1985) An Analysis of Secured Debt. Journal of Financial Economics 14:501-521
Subramanian R, Harikumar S, Ali N (2017) CEO overconfidence and agency cost of debt: An empirical analysis of CEO turnover events. North American Journal of Economics and Finance 42:300-313
Sundaram R, Yermack D (2007) Pay Me Later: Inside Debt and its Role in Managerial Compensation. The Journal of Finance 62:1551-1588
Squire R (2009) The Case for Symmetry in Creditors' Rights. The Yale Law Journal 118:806-867
Squire R (2011) Strategic Liability in the Corporate Group. The University of Chicago Law Review 78:605-669
Trautbeck-Kim M (2011) Anreizkompatibilität der gesetlichen Rückstufung von Gesellschafterdarlehen in der Insolvenz. https://opus4.kobv.de/opus4-uni-passau/frontdoor/index/index/docId/149
Triantis G (1992) Secured Debt under Conditions of Imperfect Information. J. Legal Stud 21:225-258.
Triantis G (1994) A Free Cash Flow Theory of Secured Debt and Creditor Priorities. Virginia Law Review:2155-2168
Triantis G (2000) Financial Slack Policy and the Laws of Secured Transactions. The Journal of Legal Studies 29:35-69.
Tucker M (2010) Debt Recharacterization During an Economic Through: Trashing Historical Tests to Avoid Discouraging Insider Lending. Ohio State Law Journal 71:187-228
Tung F (2011) Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation. Northwestern University Law Review 105:1205-1251
Ulbrich M. (2011) Die Abschaffung des Eigenkapitalersatzrecht der GmbH. Nomos, Baden-Baden
Warren E (1997) Making Policy with Imperfect Information. Cornell Law Review 82:1379-1395
X (2004) Elevating the Status of Tort Claims in Bankruptcy in Pursuit of Optimal Deterrence. Harvard Law Review 116:2541-2564
Zhang W (2014) The Paradoxes of Secured Lending: Is There a Less Uneasy Case for the Priority of Secured Claims in Bankruptcy?. U. Pa. J. Bus. L. 16:789-841

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