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LINKING THE MORAL HAZARD AND LEVERAGE IN COMPANIES

José Luis Retolaza, Leire San-Jose,
Sara Urionabarrenetxea & Domingo García-Merino

Abstract: This paper is intended to fill the gap in the literature on moral hazard amongst companies. It seeks to explore the moral hazard for companies by linking the leverage range with the risk involuntarily assumed by third parties. The paper takes the distinctive approach of trying to understand the nature of the moral hazard affected not only through asymmetries but also through lack of resources in companies. The paper also seeks to establish the importance of companies'moral hazard from an ethical perspective and proposes an index –the moral hazard index– which provides the option of reducing risk when managers make (moral) decisions on leverage and equity levels; subsequently the assumed risk is controlled. An extreme case is set out of companies that have such high leverage that they survive with negative equity (sometimes also known as zombie companies). In such cases the assumption of risk by third parties is undeniable. The paper explains the problem and shows the concern regarding company leverage. Although the index is still only theoretical, it offers opportunities for improvement to determine its applications and utility. Moral decisions are expected to be taken with regard to the structure of the capital of companies in order to reduce the risk assumed by third parties.

Keywords: *stakeholder, assumed risk, ethic, value, responsibility, loss, decision-making, strategy, trust.*

INTRODUCTION

If, as Krugman (2009: 127) states, the multiplication of profits and losses depends on the degree of financial leverage, some ethical responsibility must exist amongst those who make the decision on this leverage when multiplication of losses is distributed among a group of stakeholders who have not previously consented to assuming it, and who in all cases do not participate equally or similarly in the distribution of the possible multiplication of profits.

Decision-making of company managers depends on a number of factors, including *inter alia* situations, relationships, information, values and feelings. However, the decision by the manager of a company to increase leverage or reduce equity will mark and predetermine its behaviour with the stakeholders with which it does business. Indeed, such moral hazard in companies is committed by the decision makers and assumed by other stakeholders or third parties. The causes may be not only informational asymmetries, but also power or temporal asymmetries. However, other determinants such as the lack of resources might also affect their decisions; and subsidiarily, these decisions will influence the decisions, intentions, relationships and finance of stakeholders. This paper therefore develops a theoretical index with the aim of reducing the assumed moral hazard in companies, after first explaining their importance and determinants. There is a gap in the literature on moral hazard in companies which this paper seeks to fill not only by explaining the problem of moral hazard in companies, but also by proposing a theoretical index that will reduce and control this risk.

The most important implications reveal that there is an ethical problem regarding decisions on the capital structure of companies. Moral hazard, in addition to business risk, exists when a company's capital is based on high level of leverage or reduced equity. Negative equity is an extreme case of this. However, there is an option for reducing moral hazard in order to limit damage to third parties.

This paper is organized as follows. Section 2 discusses the theoretical foundations, contextualizing and defining the point of view and delimiting the problem linking moral hazard and leverage. Section 3 describes the problem of moral hazard in companies. The following two sections describe the determinants of moral hazard from a company view; section 4 describes different types of asymmetries that might affect it and section 5 addresses the lack of resources and the stakeholder's point of view. Sec-

tion 6 offers an extreme example, the case of negative-equity companies. Finally, the last section puts forward a proposal for a moral hazard index based on level of leverage intended to reduce induction of risk to third parties without their knowledge. The paper ends with an outline of the main conclusions and suggestions for future research.

1. MORAL HAZARD AND BUSINESS DECISIONS: CLARYFING AND EXPLAINING CONCEPTS FROM DIFFERENT THEORIES (GAME, AGENCY, AND STAKEHOLDER THEORY)

Moral hazard arises in any situation in which a person makes a decision whose result benefits him if things go well, while someone else bears the cost if things go badly (Krugman, 2009). Beim & Calomiris (2001) explain the concept as a "heads I win, tails someone else loses" commitment. Simplifying matters, in such a situation the agents clearly have an incentive to place their own interests above those of third parties who might be affected by their actions.

The term 'moral hazard' has a long history; its first documented use is in Arthur Ducat's "The Practice of Fire Underwriting" (Ducat 1865, cited in Baker 1996: 249), referring to behaviour that increases the risk of insurance loss (Dembe & Boden, 2000). In economics, however, the concept (though not the term) was first discussed by Adam Smith (1776) in his analysis of joint-stock companies, in what might be considered a forerunner of today's agency theory (Jensen & Meckling, 1976). Interestingly, it was Edmund Burke (1890) –in his diatribe against the republican democracy of the French Revolution– who helped propagate the concept.

More recently, the term was reintroduced by Arrow (1971, 1985) and Pauly (1968), with the latter disassociating it from the field of morals and transferring it to the area of game theory. As a result of the Arrow-Pauly debate, the concept of "moral hazard" spread beyond the strict bounds of economic theory and entered common parlance (Rowell & Connelly, 2012) to describe a very diverse range of phenomena, including unemployment benefits (Foster & Rosenzweig, 1994; Chelius & Kavanaugh, 1988), rural sharecropping (Cheung, 1969), the stock market (Diamond, 1967) and even family conduct (Becker, 1981).

While in the insurance field, "moral hazard" was always associated with a type of moral conduct, acquiring normative connotations (Baker, 1996), in the field of economics a more positive perspective, free from

moral connotations (Haynes, 1895; Rubinow, 1913; Knight, 1921) was adopted practically from the outset. It was this interpretation that was later picked up again by Arrow and Pauly. However, this supposedly positive perspective may only be considered in isolation from a moral perspective, if we accept the anthropological assumption of "*homo economicus*" as a determinant of human conduct; if humans seek only and rationally to maximize economic profit, there should be no need to make reference to moral conduct, given that the person's action will depend solely on the economic incentives provided by his or her environment. However, since Simon (1955) this anthropological conception has been called into question and the importance of a person's cognitive process as a true decider, in which moral reflection is a fundamental element, has become particularly relevant. This paradigm reconciles the normative and the positive perspective, even if the former centres on the particular person who decides and acts from a position of freedom, and the latter refers to the determinism of large numbers.

Moral hazard has been studied and explained by game theory, agency relationship and stakeholder theory. For example, the difference with the classic situation of game theory (Osborne & Rubinstein, 1994) is that on the one hand, the result depends on the situation and not on the behaviour of the other participant or participants (passive agents), and on the other, that the result is always positive for the decider. From a selfish perspective, therefore, the best option of a rational *homo economicus* would be to engage in "moral hazard".

In an agency relationship (Jensen & Meckling, 1976), moral hazard is explained by the fact that the agent can seek to increase the benefit to himself by increasing the medium and long-term risk to the principals. Clearly, the agent incurs moral hazard *vis-à-vis* the principal, although an updating of that risk need not necessarily depend solely on external incentives. Instead it depends largely on the subject's process of moral reasoning and his or her personal alignment with the interests of the principal, as rediscovered in the Stewardship theory (Davis, Schoorman, & Donaldson, 1997). Given that individual utilitarian motivation is unnecessary, albeit possible, this is a situation of moral decision, where the possibility of passing moral hazard on to a third party is one to be evaluated.

However, moral hazard in a firm is not limited solely to the relationship between agent and principal. Under stakeholder theory (Freeman, 1984), for example, the responsibility of the managers may be considered to extend not only to the principal, but also to all the stakeholders who

participate in creating value or even those who, although not participating, are affected by the organisation's activity. Without needing to take a multifiduciary approach, in which stakeholders are viewed as principals (Goodpaster, 1991; Boatright, 1994), the manager may be considered to incur moral hazard when his or her action involves risks to third parties that they have not explicitly accepted. From this perspective, any commitment assumed on the basis of an explicit or implicit contractual relationship, in which doubts exist as to possible compliance, involves moral hazard.

2. MORAL HAZARD AND LEVERAGE: DELIMITING THE PROBLEM

There is a gap in the literature on the study of moral hazard from a company perspective, but in practical company decision-making there is a problem arising out of the assumption of unexpected risks for third parties. This paper therefore centres on the possible moral hazard assumed by the manager of a firm *vis-à-vis* third parties, within the framework of his or her regular activity; and specifically, on whether it is possible to create instruments that allow that risk to be identified and reduced.

Within the course of its regular economic activity, a firm assumes commitments with third parties, *inter alia* employees, providers, government, financiers, customers, partners and the general public, as well as its shareholders. In a new firm, it is quite simple to identify the relationship between equity and commitments on investment and payment, since there is usually a strong correlation between stable funding and fixed assets (Shyam-Sunder & Myers, 1999). As business develops, however, the current assets and liabilities increase, and it becomes increasingly difficult to identify resources with payment commitments. The accounts certainly reflect a faithful image of the company. However, the fact that assets and liabilities balance out can mislead one into believing that the company is meeting all its debts. An example of that "deception" can be seen in the extreme case studied in this paper of companies with negative equity. Thus, when a firm completes its activity, there is usually a mismatch between the realization value of the assets and the sum of the liabilities, generally as a result of the specific circumstances of the assets and the transaction costs associated with the need for immediate sale. This disparity is usually made up with part of the organisation's equity. If there

is enough equity, the company should be able to complete the business and meet all of its commitments to third parties (see Urionabarrenetxea, San-Jose & Retolaza, 2016 for empirical data about this argumentation).

The balance sheet therefore shows equilibrium between the company's assets and, at least in part, the financial commitments it has acquired with the different stakeholders. Clearly, the greater the organisation's equity, the greater its capacity to meet its commitments in adverse situations, for which reason very high leverage can not only affect the company's sustainability, but can also lead to an insufficiency of resources to meet the commitments it has acquired with third parties (Biais & Casamatta, 1999).

In contrast, low levels of borrowing tend to entail a lower yield on equity and, therefore, a cost for shareholders (John & Senbe, 1998). An increase in leverage can help increase the yield on equity, but at the cost of increasing the risk of non-payment. In this case, therefore, the interests of the shareholders and the risk for other stakeholders appear to be in opposition, reflecting a possible case of "moral hazard" by the decision-maker, whether this is the principal (shareholder) or an agent delegated by the principal. In theoretical terms, one might establish a *correlation of inverse risk* between the capitalists and the third parties participating in a firm's business activity. There are therefore, *ceteris paribus*, two possible situations in the event of an increase in the company's capital. The first one arises when the economic result is positive; in this case, an increase in the company's capital will correspond to a decrease in the return on equity (ROE) obtained. The second one arises when the accumulated economic result is negative; in this case the increase in capital in the company will correspond to an increase in the risk assumed by the shareholders and will make it possible to reduce the risk of non-payment to third parties related to the company. On the other hand, a decrease in the capital will mean increasing the return and reducing the assumed risk affecting shareholders; the effect on possible creditors will be to reduce the assurance of being paid, with no apparent consideration in return, clearly leaving third parties at a disadvantage.

3. MORAL HAZARD GENERATION PROCESS: ASYMMETRIES VIEW

For moral hazard to exist, there must be some form of asymmetry; the simple risk associated with present or potential profit cannot be con-

sidered moral hazard if it has been adopted in full consent under the conditions set out by Donaldson and Dunfee (1999, 2000a and 2000b). According to the literature (Hill & Jones, 1992; Donaldson & Preston, 1995; Richardson, 2000; Cai, Qian, & Yu, 2015) there are four types of asymmetry that might be considered to generate moral hazard in a company: asymmetries of information, asymmetries of power, asymmetries of trust or responsibility and temporal asymmetries.

These asymmetries, as we shall see, have previously been investigated as causes of moral hazard. Asymmetry of information is by far the most extensively researched type (Hölmstrom, 1979; Bernardo, Cain & Luo, 2001), since the use of information of unequal quality by the agents involved affects risks in business decision making; mismatches in information can cause third parties to assume risks because they are not sufficiently informed. Asymmetry of power (Dawkins, 2014; 2015) occurs when the affected party does not have the capacity to oppose the situation of risk being considered by the decision-making party. This can arise, for example, in situations of economic dependency, cash needs, or direct or indirect power. The common feature of all such situations is that the capacity for negotiation and decision-making of one of the parties is more limited than that of the other. For example, a large number of EU countries have introduced legislation relating to payment periods, in response to public disquiet over this type of asymmetry of power. The third type, asymmetry of trust or responsibility, arises when the affected party's expectations of the decider are not matched by a similar level of responsibility in the opposite direction. An example can be seen in the case of Spanish preferred and perpetual stock. This situation may be considered an extension of the agency theory (Jensen & Meckling, 1976) and to lie outside the domain of governance, since there already exists a delegation of decision-making and a responsibility on the part of the agent to safeguard the interests of the principal. Similarly, it is not only aspects related to rationality that are relevant in this type of asymmetry, but also emotional aspects, where trust becomes a constituent element of the personal relationship itself. Finally, the fourth type of asymmetry is temporal asymmetry, whereby there may be a present benefit for the decision-making party linked to a situation of future risk or uncertainty arising as to the results to be obtained by the affected party. One specific case of temporal asymmetry is that of cash asymmetry, where the company's equity acts as a security that the commitment will be fulfilled regardless of the uncertainty introduced into the system by future economic events

Given that the principal mechanisms generating moral hazard that we have identified are asymmetries, it is worth considering to which extent the solution to this risk lies in achieving symmetry, rather than seeking answers in the structure of the company's capital. The fact is that it is practically impossible to reduce these asymmetries to zero. Of the four types, perhaps the easiest to reduce is asymmetry of information. Nonetheless, while this may be feasible for small quantities of information, it is entirely unviable in a complex economic system with multiple different inter-relations, where the information on each one now tends towards the infinite. To take the case of the suppliers, for example; even if they were to assume that their customers were entirely transparent and that there was no problem of a lag in information, for small companies it would be entirely impossible to analyse the overall information of the company in sufficient detail to be able to say for certain that there is no asymmetry of information. It is important to bear in mind that the asymmetry of information is so great that it undoubtedly also exists within the same firm between different stakeholders or indeed among the same stakeholders. One solution is to delegate the analysis of information to a professional third-party, albeit this may introduce new asymmetries and possible agency issues. One might even transfer the risk to third parties, for example by taking out credit insurance.

Nonetheless, this is only a partial solution, since such policies only cover part of the debt or certain types of non-payment or company; and they are expensive, when the process should have no cost. Moreover, not only does it not resolve the moral hazard, it may even help to provide a justification for it; the company indulging in moral hazard might think that because the creditor company has the resources to meet the possible risk, the situation is one of normal business risk rather than moral hazard. This system, outsourcing the responsibility as it does to third parties, would appear unlikely to guide the market towards more ethical and responsible behaviour; on the contrary, it leads to a general increase in the transactional costs of a given economy.

4. MORAL HAZARD GENERATION PROCESS FOR STAKEHOLDERS. WHAT HAPPENS WHEN THERE IS A LACK OF RESOURCES IN A COMPANY?

One constantly hears examples of companies that have been unable to fulfil their contracts with employees; that have stopped paying provid-

ers; that cannot provide the services or guarantees promised to customers or that have failed to pay major amounts owed to public authorities; in all these cases there has been a dereliction of compliance with the explicit contractual obligations (contracts with providers, employees and customers) and implicit obligations (commitments to customers and under law) assumed by the organization. As can be seen in Table 1 mere ex-post non-compliance, although incontrovertibly proving that a risk has existed (because of the resulting negative impact), does not necessarily presuppose the existence of moral hazard, at least in the regulatory sense of the term; the decider may have considered the risk to third parties to be non-existent in the *ex-ante* moment of making the decision, either because the risk appeared to be null, based on available information, or because it was unexpected. Unquestionably the decider may also have taken a decision that benefited him in full awareness of the effect on third parties, regardless of how likely he considered the materialization of that risk to be; if so, then this is a clear case of moral hazard. Within the risk / benefit framework, he may also have taken the decision he considered most beneficial for those third parties. In this case, the issue is not one of moral hazard, but of decision making in conditions of uncertainty.

Table 1. Moral Hazard and Uncertainty

	AGENT 1			
	Situation/Results	Wrong Risk Assessment	Moral Hazard	Decisions in Uncertainty situation
AGENT 2	Optimal Results	1(+) 2(+)	1(+) 2(+/ 0)	1(+) 2(+)
	Worst Results	1(+/0) 2(−)	1(+/0) 2(−)	1(+/0) 2(−)

There are three possible scenarios regarding the assumption of risk. In wrong risk assessment situations and in situations of uncertainty, agent 1 seeks the benefit of agent 2, besides his/her own benefit, so both will result in optimum benefit (++). In the case of moral hazard, agent 1 seeks its own benefit (+) regardless of the result for agent 2, so in optimal conditions agent 2 may be benefited or not (+/0). But the fundamental difference occurs in adverse circumstances, as in the situation of moral hazard agent 1 gets benefit (+) even though agent 2 gets losses (−). In

wrong risk assessment situations and in situations of uncertainty, the injury to agent 2 (–) usually is not accompanied by a benefit for agent 1(0). This independent benefit of the risk is not only the key to moral hazard, but also its main motivation.

This study focuses on the determinants of moral hazard; and especially on the way they can be used by managers to identify and avoid situations of third-party risk, just as liquidity and cash ratios can be used by managers to avoid situations of non-payment. In this line, Boatright (2011: 158) concludes that "there are at least three explanations for why corporations would seek, in practice, to manage risks despite the theoretical premise that such attempts provide no benefit to shareholders". Any view of risk can be explained or measured in terms of a ratio, such as the ratio here linked to moral hazard. This is helpful in eliminating or at least controlling the moral hazard passed on to third parties.

Undoubtedly, the leverage reflects a certain degree of risk, since in most cases, the money owed by the company, or at least, part of it, cannot be realized in the short-term. Nonetheless, for moral hazard to exist, the existence of a business risk is not in itself enough, since on most occasions this risk is assumed consciously within the profit/risk framework associated with any type of investment. Therefore, no type of moral hazard would appear to exist towards shareholders when they decide to invest their capital in a business project. Decisions regarding long-term liabilities are similar. In general, the financial institutions have information and instruments to analyse a firm's risk. Unless fraudulent information is provided –in which case the manager would be directly committing a crime– it would be very difficult for a company to pass on a hidden risk to the financial institution. Complementarily, financial institutions generally have legal devices to ensure that the repayment of their debt is prioritized over that of other creditors. Given the quality of information and the capacity of analysis, a financial institution in a process of long-term financing can be considered to have the necessary instruments to make a suitable risk / benefit analysis, and the risk will therefore be freely and consciously assumed, with no occurrence of moral hazard.

So who would such third-party risk substantially affect? Although the individual casuistry undoubtedly varies from one firm to another, it would normally affect short-term creditors, normally suppliers, workers, government (VAT, social security, etc.); and those holding present or future rights not updated on the books, such as customer returns or warrantees, litigants or those with entitlements to restoration –e.g. environmental–

which might well also include the government, and –directly or indirectly– the general public related to the company and to government creditors. There may also be some form of long-term creditor, in general where there has been some problem of asymmetry of information, as was the case with the Spanish "preferred shares"[1].

5. THE NEGATIVE EQUITY COMPANIES VIEW: A SPACE OF ANALYSIS

Although in theory it is possible to identify the maximum degree of leverage beyond which any increase in borrowing would entail moral hazard, in practice it is very complicated given the delimitation required. However, one can establish the cut-off points, which can be used to determine the differentiating factors. At the high end of the scale, if the debt ratio (the ratio of external debt[2] to equity) is below 1, there is a guarantee that whatever the situation, the company will be able to satisfy its external debts to third parties. At the other end, extreme leverage occurs in companies with negative equity, whose leverage ratio will always be infinite. In such cases, it is certain that if the company goes out of business, it will be unable to meet all its external debts. Any increase in borrowing would therefore appear to involve moral hazard, unless there is complete symmetry with the party potentially affected.

Net worth –or equity– can be defined as the difference between assets and external debt; in a financially healthy firm, the equity should be positive and preferably greater than the subscribed share capital; companies only have negative equity when successive losses in their business activity have led them to use up all of their subscribed capital. In many countries, especially in the European Union, a firm that loses all its equity as a result of consecutive operating losses becomes technically bankrupt and is required to increase its equity or cease trading (Correa,

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[1] Since 2008 Spanish financial entities greatly increased the sale of preferred shares among retail customers. The Organization of Consumers and Users (OCU) estimates that at least 80% of buyers were over 65 years old and they showed a tendency to buy this financial product without knowing what they were buying, simply because they trusted the entity that was selling them. 3 years later, when the last issue had been placed, the outstanding amount of preferred shares in the hands of retailers was close to 30,000 million euros (data CNMV), most of which have lost 40%-65% of their nominal value.

[2] The external debt is referred to liabilities except of shareholder funds.

Acosta & González, 2003), since it lacks the resources to ensure collection of liabilities. This creates the paradoxical situation that any residual risk is passed on to third parties, whereas any residual profit would go to the shareholders – who are not actually risking any capital, given that they have already lost it all. As can be seen, this would be a clear situation of moral hazard on the part of the shareholders – and also the management, if they receive positive incentives to prolong this situation.

Here we can demonstrate, in theory at least, that there are two consequences that negatively influence stakeholders in companies with negative equity. On the one hand, the assets are not sufficient to meet the liabilities, and therefore if the company goes out of business it would be unable to meet all of the financial commitments it has assumed with third parties. On the other, the principle of balance between risk and decision-making is broken, and the shareholders manage the decision-making rights at no risk, since the capital with which the company operates is not its own, but loaned by third parties.

It would be easy to imagine that the number of such cases is negligible, and in all cases the situation is very limited in duration; however, it is a relatively common phenomenon in Europe and companies in this situation have an accumulated negative equity of around €1.16 trillion (Amadeus database, 2015). Business literature on moral hazard is not scarce in general, but there is not a huge literature focus on the analysis of the moral hazard in companies. However, there are a number of articles on 'zombie firms' (Kane, 2012; Papworth, 2013), which are characterised more by their negative cash flow than by negative equity. These studies (Ahearne & Shinada, 2005), appear to show when a significant number of such companies exist; they cause a deterioration in the business fabric, resulting in a reduction in employment and investment opportunities (Caballero, Hoshi & Kashyap, 2008).

One could undoubtedly point to the moral hazard generated by the group of agents –shareholders, management, regulators, financiers, etc.– who allow such zombie companies to continue to survive at the expense of business development. Nonetheless, the complexity of this problem greatly exceeds the scope of this study; in the case of companies with negative equity, there exists a situation of dynamic risk; going out of business would negatively affect third parties, whereas staying in business would avoid that risk being updated in the future if the company were to prove successful; but if it were not, it might further worsen the harm to third parties.

6. A MORAL HAZARD INDEX PROPOSAL BASE ON COMPANY LEVERAGE

From the discussion thus far, one can identify two fundamental mechanisms for reducing the moral hazard incorporated by the manager. One is to provide complete symmetry –of information, power and responsibility– so that third parties assuming some form of risk of non-payment, do so consensually, in such a way that where there exists a real risk for the creditor, the debtor does not generate moral hazard. We consider this course of action to be an interesting one and it should by no means be ruled out. Although we consider it difficult to achieve zero asymmetry, we believe that all efforts to reduce any kind of asymmetry have a positive impact in terms of generating a more ethical economic system. The second mechanism –entirely compatible with the latter– consists of maintaining a sufficient degree of economic guarantee to meet the commitments made to third parties, even in the event of poor performance by the company.

The use of certain ratios as a system for guaranteeing payment are not a new feature in business management, and are generally referred to as covenants (Smith & Warner, 1979). Covenants may be viewed as agreements, normally referencing financial ratios, which the debtor must fulfil in order for the loan to remain active; if these prearranged limits are exceeded, the debtor is considered to be in breach of the agreement and the borrower is entitled to cancel the loan and demand immediate payment of the full amount of the debt. Covenants have two purposes: on the one hand, they prevent the debtor company from performing operations that involve a risk for the lender; and on the other, if such a situation does arise, they allow the lender to recover the funds before there is any further deterioration in the situation which might make it unviable to call in the loan. This approach is consistent with classic studies by Jensen & Meckling (1976) and Smith & Warner (1979), which suggest that covenants serve to curb agency risk and reduce control costs.

As we have seen, covenants use a wide and varied series of financial ratios (Holthausen & Leftwich 1983; Dichev & Skinner 2002). These include: external debt to cash flow, interest coverage, fixed charge coverage, tangible net worth, net worth, debt to tangible net worth, debt service coverage, current ratio, senior debt to cash flow, cash interest coverage, debt to equity, leverage ratio, etc. Nonetheless, one can distinguish between two broad types (Christensen & Nikolaev, 2012). The first group

includes capital covenants, which are based on information on the sources and uses of the capital, particularly information from the balance sheet. The second group are performance covenants, which are based on results, as obtained mainly from the operating account. This information is sometimes used on its own and sometimes in combination with data from the balance sheets.

Most European countries have opted to include a covenant in the legislation based on the ratio between equity and subscribed capital; if this falls below a given ratio, the company has a short period of time to choose between replenishing the lost capital to within admissible limits or going out of business. However, as we have seen in the previous section, in a large percentage of cases, this condition is not fulfilled[3]. Clearly, the purpose of establishing a minimum ratio of equity to subscribed capital is to ensure symmetry of information, by ensuring that the information furnished in official documents sufficiently matches the real situation. Nonetheless, this requirement offers no great advance in the degree of risk assumed by third party creditors, since the share capital does not necessarily bear any relation to the company's volume of business, or to its liabilities. If one is to continue along the path of the net assets, it would appear more appropriate to impose some requirement referring to leverage; since in the event of the company's closing down, this is the factor that will determine whether all third-party debts can be honoured. According to a recent study (Graham et al., 2014) the ratio of net worth to liabilities among companies has fallen from 75% in 1930 to just 35% in 1990; which, *ceteris paribus*, has led to a considerable increase in the moral hazard generated by companies as a whole. As already discussed, low levels of leverage would appear to benefit creditors, since a larger volume of funds is available for possible repayments; on the other hand, a high level of leverage theoretically benefits shareholders, since more business can be done with the same capital, and, in the event of profits, the return on their capital will therefore be greater. However, if one takes the balance sheet as a reference, it is difficult to ascertain the threshold of leverage beyond which a company enters into moral hazard, since in theory, only

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[3] The previous section only takes into account the case of companies with negative equity, where it is clear that the company does not in any case have equity with which to honour its debts with third parties. However the covenant established in the legislation tends to be much more demanding; in Spain, for example, a ratio of over 50% of subscribed equity is required.

companies with negative equity would be incapable of balancing their books without damaging third parties if they were to go out of business; in all other cases, they would only have to liquidate their assets to meet their liabilities, with a greater or lesser loss sustained exclusively by the shareholders. Thus, the risk of loss appears to fall exclusively on the shareholders, who are assumed to have taken the risk/profit binomial into account when deciding to invest; and alternatively they have the mechanisms provided by the market to disinvest as they see fit if they consider the risk to be excessive. And in any event, if any problem were to exist, this could be correctly explained by the agency theory.

Despite this theoretical balance, the reality shows that this is not the case; in the current economic crisis, there have been countless cases of companies closing down, where not only have the shareholders lost their investment, but multiple creditors have failed to recover the monies owed to them: suppliers, workers, government, customers, etc. It is obvious that the supposed equilibrium of the balance sheets has not worked. The reason is that the theoretical value of the assets does not correspond to their real disposal value at that point in time. Leaving to one side the effects of inadequate accounting –for example, possible overvaluation through the effect of reduced depreciation or an over-optimistic estimate of the volume of non-payments– the fact is that a significant volume of assets are idiosyncratic, and lack value outside the productive structure of the company (this is the case with most intangible assets and specific installations). The simple fact is that a company's residual assets, which must be used to pay creditors, are worth very much less than its real assets; the few studies conducted on the subject (Kaplan 1989; Holland, 1990; Shleifer & Vishny, 1992; Recio, 2011), suggest a depreciation of between 50% and 70%. This high degree of variability is due to the fact that the percentage of residual assets depends on a variety factors, such as company size, industry and the business model itself. The main reason for this lies in intangible assets, which value usually is attached to the rest of the company, not being strippable; these difficult their economic transmissibility. Therefore, the economic value of intangibles depends on the continuation of the business relationship of which they are part. The presence of such assets limits the leverage capacity of the company (Vicente, 2001). It would seem, then, that in order to determine whether the company can really honour its external debts to third parties, one would have to identify the organisation's residual assets and deduct the overall liabilities, except for the net worth. This would give a more accurate idea of the risk of non-payment assumed by third parties.

Nonetheless, it should be noted that this risk is not distributed evenly among all creditors. Long-term and institutional creditors (financial institutions and government) normally have preferential rights of payment and the balance available to other creditors is therefore reduced in proportion. Suppliers, aware of this problem, tend to make a preliminary analysis of their customers and take our credit insurance. However, accepting such a situation as normal, as well as making the system more expensive, implies a presumption of the debtor's irresponsibility, a very dangerous step from a legal and (especially) a moral perspective. In any contractual situation, the debtor should take responsibility for repaying the amount owing, unless the contract makes it clear that this is an operation of assumed risk and sets out the conditions thereof. One must consider to what extent moral hazard can be adduced in a debt with institutional investors and bondholders, where the profit/risk binomial has already been incorporated into the operation. However, if creditors establish some form of guarantee of preferred status, the risk of residual non-payment will fall precisely on those operators who do *not* act on the basis of a profit/risk binomial, but are merely charging for their labour, service or rights, as agreed normally on a zero-risk basis.

In any case, the covenants established by the financial institutions for credit operations commonly use financial leverage, which could be factored in using the following formula:

LTD + STD + Guarantees + outstanding bonds, guarantees and promissory notes – Cash and Banks – STFI (short-term financial investments) – Treasury stock (market value) / Net Worth

As can be seen, in this formula, the residual value of the assets is irrelevant, since only the short-term realizable value has been taken into account. A ratio less than or equal to 1 would mean that the company can meet third party payments, even in the event of a sudden cessation of its business activity. From there, any reduction below this would imply an increase in the moral hazard assumed, which up to a certain percentage could be balanced against the potential realisation of the residual assets; after which moral hazard towards third parties would exist.

In order to factor in the potential of the residual assets, and thus make the formula less demanding, one could include the forecast liquidation in the numerator as follows:

LTD (long-term debts) + STD (short-term debts) + Guarantees + Outstanding bonds, guarantees and promissory notes – Cash and banks – STFI (short-term financial investments) – Treasury stock (market value) – Residual value of assets (excluding cash and banks) / Net worth ≤ 1

The more the ratio falls below 1, the more the moral hazard incurred by the manager, who is endorsing a potential risk of non-payment to third parties. Unquestionably, like any other economic/financial ratio, this index will not be decisive in the decision, but it will be a factor in the manager's process of ethical deliberation, given that the likelihood of the company's going out of business will undoubtedly be a fundamental component in any decision. An increase in the risk of leverage combined with a zero risk of bankruptcy should apparently have no consequences for third parties; on the other hand, low percentages of residual risk of non-payment combined with a high risk of bankruptcy require a more complex moral decision. In this regard, it is worth noting that one of the criticisms levelled against capital covenants (Christensen & Nikolaev, 2012) is that they are excessively static, as compared to performance covenants. At the same time, this type of indicator necessarily refers to the past, whereas the decisions that must be taken by the decider will be in the future; it might therefore be helpful to include a performance factor –forecast annual cash flow– in the index to turn it into a mixed indicator, which we believe would have greater potential.

LTD (long-term debts) + STD (short-term debts) + Guarantees + Outstanding bonds, guarantees and promissory notes – Cash and banks – STFI (short-term financial investments) – Treasury stock (market value) – Residual value of assets (excluding cash and banks) – Forecast cash flow for current year / Net worth ≤ 1

In a more summarised form, one could establish a moral hazard index (MOHAI) as follows:

MOHAI = Payable Liabilities – Residual Assets – Cash flow / Net worth *≤ 1* →

$$\mathfrak{y} = \frac{Adv}{Nw} \leq 1$$

Where:
ɲ = moral hazard index, Mohai
Adv = *Adjusted Debt Value = Pl-Ra-Cf*
Pl = Payable Liabilities = LTD + STD + guarantees + outstanding bonds, guarantees and promissory notes
Ra = Residual Assets = Cash and Banks – STFI (short-term financial investments) – Treasury stock (market value) – residual value of the remaining assets (estimate)
Cf = Cash Flow in current year (estimate)
Nw = Net Worth = Equity + reserves – accumulated losses

CONCLUSIONS

The study is twofold: on the one hand, it addresses to show the existence of a moral hazard related to high levels of leverage, and on the other hand, to provide an index that serves to manage this risk responsibly by managers. So far, this type of moral hazard has been little analyzed since from a financial perspective the premise is assumed that a raise of leverage optimizes the result for shareholders, and from an ethical perspective it is seen as a set of technical decisions oblivious to ethical reflection. The crisis of 2008 has settled the theoretical discussion, highlighting the risk endorsed by the financial system to third parties: bailouts, unpaid liabilities, dismissals, preferred shares, ground clauses, threat of systemic risk and so on. From the financial sector itself (Basel III / IV) regulators recognize the link between risk and leverage, compelling banks to increase quickly their capital requirements.

But beyond this example, despite its importance, the article reveals that leverage can be a moral hazard in many other sectors, and also that it is a widespread problem in the European Union, as shown by the data on the number of companies with negative equity and the cumulative volume of the same. We may think that moral hazard takes place when the decision-maker endorses the risk to a third party to obtain personal gain. This occurs when a company does not have enough assets to respond to liabilities and shareholders make risk decisions when funds they are using come from borrowings, given that they have already lost their own funds.

Certainly moral hazard linked to leverage is not a one-dimensional decision; on the contrary it turns on a complex decision, since the firm's cessation of business is also going to cause injury to many of its partici-

pants, even when it is an orderly shutdown. In this regard we believe that the decision on the degree of moral hazard taken in specific circumstances becomes a moral problem for the decision-maker, therefore it should be subject to ethical reflection.

Contextual factors involved in this risk, expectations of future performance and conditions of asymmetry of information, bargaining power and responsibility, necessarily lead to a complex decision. In this sense MOHAI do not aim to be a technical element that exonerate the freedom of the decision-maker, but as with other indices, it aims to agglutinate complex information and facilitates the management decision process. We are not thinking of its use by egocentric managers who put their own interests above the other stakeholders', but of responsible managers seeking decisions that may optimize the result for the whole of the stakeholders; thus, stakeholders would assume risk in an informed manner, conscious and free, according to the expected results. We think that once displayed the moral hazard problem associated leverage as an ethical problem, managers themselves will be interested in building instruments that help them improve the decision-making.

From the perspective of ethical research we are facing an emerging issue, hence its importance, inasmuch as it identifies a new problem in an area that until now had been considered highly technical. These are the major contributions: 1) To highlight the ethical perspective linked to moral hazard that occurs in the decisions on the financial leverage of the company. 2) To develop a proposed index, MOHAI, which use would facilitate decision-makers to know the degree of moral hazard endorsed to third parties based on the financial structure of the company; thus allowing them to be aware of the moral implications of their decisions. 3) From a macroeconomic perspective, the integration of this approach can help visualize the problem of firms with negative equity the injury and systemic risk they generate for the whole economy of countries, and the entire European Union.

This work opens a new way and from it emerge several research lines; some of them are more technical in nature, related to the improvement of the index itself; others, on the extension of the ethical problem to other variables of the financial structure of an organization, are more ethical; and some research lines, such as those related to risk limits, belong to the political area.

The main limitation of this study is the lack of research on the residual value of the companies in bankruptcy proceedings, because although

we can easily conclude that a company with negative equity does not have resources to meet its liabilities, it is difficult to determine when the risk of leverage begins. Theoretically while equity is not negative, the asset should be able to meet the liabilities of the company, but as the residual value in bankruptcy proceedings is lower than the book value, this parity is usually broken. To know, depending on sector, size and country, the asset in case of cessation of activity will allow tuning the moment in which moral hazard to others starts.

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REFERENCES

Ahearne, A.G. & Shinada, N. (2005). Zombie Firms and Economic Stagnation in Japan. *International Economics and Economic Policy*, 2(4), 363–81.

Arrow, K.J. (1971). Political and economic evaluation of social effects and externalities. *Frontiers of Quantitative Economics*: Papers Invited for Presentation at the Econometric Society Winter Meetings, New York.

Arrow, K.J. (1985). The economics of agency. In J. W. Pratt and R. Zeckhauser (eds.) *Principals and agents. The structure of business*. Boston: Harvard Business School Press.

Baker, T. (1996). On the genealogy of moral hazard. *Texas Law Review,* 75(2), 237-292.

Becker, G.S. (1981). Altruism in the Family and Selfishness in the Market Place. *Economica,* 48 (189), 1-15.

Beim, D.O. & Calomiris, C.W. (2001). *Emerging Financial Markets*. New York: McGraw-Hill/Irwin.

Bernardo, A.E., Cai, H., & Luo, J. (2001). Capital budgeting and compensation with asymmetric information and moral hazard. *Journal of Financial Economics,* 61(3), 311-344.

Biais, B. & Casamatta, C. (1999). Optimal leverage and aggregate investment. *The Journal of Finance,* 54(4), 1291-1323.

Boatright, J.R. (1994). Fiduciary duties and the shareholder-management relation: or, what's so special about shareholders? *Business Ethics Quarterly,* 4(4), 393-407.

Boatright, J.R. (2011). Risk management and the responsible corporation: How sweeping the invisible hand? *Business and Society Review,* 116(1), 145-170.

Burke, E. (1890). Reflections on the Revolution in France. London: MacMillan.

Caballero, R., Hoshi, T. & Kashyap, A. K. (2008). Zombie Lending and Depressed Restructuring in Japan. *American Economic Review*, 98(5), 1943–1977.

Cai, J., Liu, Y., Qian, Y., & Yu, M. (2015). Information asymmetry and corporate governance. *The Quarterly Journal of Finance*, DOI: 10.1142/S2010139215500147.

Chelius, J.R. & Kavanaugh, K. (1988). Workers' compensation and the level of occupational injuries. *Journal of Risk and Insurance,* 55(2), 315-323.

Cheung, S.N.S. (1969). *The Theory of Share Tenancy*. Chicago: Chicago University Press.

Christensen, H. B. & Nikolaev, V. V. (2012). Capital versus performance covenants in debt contracts. *Journal of Accounting Research*, *50*(1), 75-116.

Correa, A., Acosta, M. & González, A.L. (2003). La insolvencia empresarial: un análisis empírico para la pequeña y mediana empresa. *Revista de Contabilidad*, 6(12), 47–69.

Davis, J.H., Schoorman, F.D. & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review,* 22(1), 20-47.

Dawkins, C. (2015). Agonistic Pluralism and Stakeholder Engagement. *Business Ethics Quarterly*, 25(1), 1-28.

Dembe, A.E. & Boden, L.I. (2000). Moral hazard: a question of morality? *New Solutions*, 10(3), 257-280.

Diamond, P.A. (1967). The role of a stock market in a general equilibrium model with technological uncertainty. *The American Economic Review,* 57(4), 759-776.

Dichev, I. D. & Skinner, D. J. (2002). Large–sample evidence on the debt covenant hypothesis. *Journal Of Accounting Research,* 40(4), 1091-1123.

Donaldson, T. & Dunfee, T.W. (2000a). Precis for: Ties that bind, *Business and Society Review,* 105(4), 436-443.

Donaldson, T. & Dunfee, T.W. (2000b). Securing the Ties that Bind: A response to commentators, *Business and Society Review,* 105(4), 480-492.

Donaldson, T. & Preston, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of Management Review,* *20*(1), 65-91.

Foster, A.D. & Rosenzweig, M.R. (1994). A test for moral hazard in the labour market: Contractual arrangements, effort, and health. *The Review of Economics and Statistics,* 76(2), 213-227.

Freeman, R.E. (1984). *Strategic management: A Stakeholder Approach.* Boston: Cambridge University Press.

Goodpaster, K. E. (1991). Business ethics and stakeholder analysis. *Business Ethics Quarterly*, 1(1) 53-73.

Graham, J. R., Leary, M. T., & Roberts, M. R. (2014). A century of capital structure: The leveraging of corporate America. *Journal of Financial Economics.* http://dx.doi.org/10.1016/j.jfineco.2014.08.005i

Haynes, J. (1895). Risk as an Economic Factor. *Quarterly Journal of Economics,* 9(4), 409-449.

Hill, C. W. & Jones, T. M. (1992). Stakeholder-agency theory. *Journal of Management Studies*, *29*(2), 131-154.

Holland, M. (1990) When the Machine Stopped. Cambridge, MA: Harvard Business School Press.

Holmstrom, B. (1979). Moral hazard and observability. *Bell Journal of Economics*, 10(1), 74–91.

Holthausen, R. W. & Leftwich, R. W. (1983). The economic consequences of accounting choice implications of costly contracting and monitoring. *Journal of Accounting and Economics,* 5, 77-117.

Jensen, M. & Meckling, W. (1976). Theory of the firm: Managerial behaviour, agency costs, and ownership structure. *Journal of Financial Economics,* 3(4), 305–360.

John, K. & Senbet, L. W. (1998). Corporate governance and board effectiveness. *Journal of Banking & Finance,* 22(4), 371-403.

Kane, E. J. (2012). Gaps and Wishful Thinking in the Theory and Practice of Central-Bank Policymaking. *Presentation to the 30th SUERF*

Colloquium – States, Banks, and the Financing of the Economy, Switzerland, 6 September 2012.

Kaplan, S. N. (1989). Campeau's acquisition of Federated: Value destroyed or value added. *Journal of Financial Economics*, *25*(2), 191-212.

Knight, F. H. (1921). *Risk, Uncertainty and Profit*. Chicago: University of Chicago Press.

Krugman, P. (2009). *The return of depression economics and the crisis of 2008*. New York: WW Norton & Company.

Osborne, M. J. & Rubinstein, A. (1994). *A course in game theory*. Cambridge, MA: MIT press.

Papworth, T. (2013). *The Trading Dead: The zombie firms plaguing Britain's economy, and what to do about them*. London: Adam Smith Research Trust.

Pauly, M. V. (1968). The economics of moral hazard: comment. *The American Economic Review*, 58(3), 531-537.

Recio, M. L. (2011). Los recursos empresariales intangibles para superar la crisis económica. *Economistas*, 126, 272-276.

Richardson, V. J. (2000). Information asymmetry and earnings management: Some evidence. *Review of Quantitative Finance and Accounting*, *15*(4), 325-347.

Rowell, D. & Connelly, L.B. (2012). A history of the term "Moral Hazard". *The Journal of Risk and Insurance*, 79(4), 1051–1075.

Rubinow, I.M. (1913). *Social Insurance*. New York: Henry Holt & Co.

Shleifer, A. & Vishny, R. W. (1992). Liquidation values and debt capacity: A market equilibrium approach. *The Journal of Finance*, 47(4), 1343-1366.

Shyam-Sunder, L. & Myers, S.C. (1999). Testing static tradeoff against pecking order models of capital structure. *Journal of Financial Economics,* 51(2), 219-244.

Simon, H.A. (1955). A Behavioral Model of Rational Choice. *The Quarterly Journal of Economics,* 69(1), 99-118.

Smith, A. (1776). *The wealth of nations*. New York: The Modern Library.

Smith, C. W. & Warner, J. B. (1979). On financial contracting: An analysis of bond covenants. *Journal of Financial Economics*, *7*(2), 117-161.

Urionabarrenetxea, S., San-Jose, L. & Retolaza, J.L. (2016). Negative equity companies in Europe: theory and evidence; Business: Theory and Practice, forthcoming.

Vicente, J. D. (2001). Specifity and opacity as resource-based determinants of capital structure: evidence for Spanish manufacturing firms. *Strategic Management Journal*, 22(2), 157-177.

José Luis Retolaza
Deusto Business School
Leire San-Jose
University of the Basque Country (UPV/EHU)*
leire.sanjose@ehu.es
Sara Urionabarrenetxea
University of the Basque Country (UPV/EHU)
Domingo García-Merino
University of the Basque Country (UPV/EHU)
*corresponding author