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Departamento de Economía de la Empresa
Universidad Carlos III de Madrid
Calle Madrid, 126
28903 Getafe (Spain)
Fax (341) 624-9608

THE ROLE OF INSURANCE AND LIMITED LIABILITY ON CORPORATE INSOLVENCIES

David Camino*

Abstract

The current recession has been accompanied by an unprecedented rise in the incidence of default on loans and companies' insolvencies. This paper seeks to clarify the reasons for this level of default, relating them not only to the general economic conditions and the state of private sector balance sheets but also to a range of factors such as the role that limited liability and several forms of insurance contracts play in companies' failures. In particular, due to asymmetric information and "moral hazard" problems limited liability seems to favor insolvency. However, the use of credit insurance is likely to reduce the cost of capital and thus the probability of default, as insurance companies are better suited for screening and monitoring functions.

Key Words
Corporate Finance, Managerial Accounting, Insolvencies, Limited Liability, Credit Insurance.

*David Camino, Departamento de Economía de la Empresa de la Universidad Carlos III de Madrid.

1. Introduction.

A central tenet in economics and business is that competition drives markets toward a state of long-run equilibrium in which inefficient firms are eliminated and those remaining in existence produce at a minimum average cost. Consumers benefit from this state of affairs because goods and services are produced and sold at the lowest possible prices. A legal mechanism through which most firms exit the market is known as insolvency and/or bankruptcy[2].

For both bankruptcy and insolvency procedures, the key economic issue is whether the legal and economic screening processes they provide, eliminate only those companies that are economically inefficient and whose resources could be better used in another activity.

Company insolvencies have increased very sharply in the last few years, and currently stand at record levels in many countries[3]. Several factors may severely affect corporate default and although the combination of recession and high interest rates is likely to have been the main cause of this rise in defaults, the more moderate increases in company failures, which have accompanied more severe downturns in the past, suggests that other factors may also have been important.

One important common determinant is the general economic conditions for business (GDP growth, inflation, etc.), another is the level of debt. Both capital leverage (debt as a proportion of assets) and income gearing (interest payments as a proportion of income), together with higher levels of indebtedness, may lead to insolvency.

Our aim is to explore, in both theoretical and empirical terms, the nature of the relationship between debt (level and changes in borrowing), limited liability and company default in cyclical economies, characterized by financial instability. The work seeks to provide a survey and critical assessment on current economic theory relating to debt and vulnerability to corporate default and to offer empirical evidence casting light on the validity of the main theories. We suggest, as well, a number of underlying institutional factors (limited liability, bankruptcy procedures, etc.) that may help to explain the sharp increase of insolvencies during turbulent periods of the economy.

The paper is, therefore, concerned with companies' insolvency caused by the inconsistent incentives arising in a business contract specifying a fixed value payment between debtor and creditor, particularly given limited liability. The debtor prefers the state of affairs, which maximizes his wealth while the creditor prefers one that maximizes the expected value of the debtor's obligations. Consequently, limited liability, favors corporate insolvency as increases borrowing costs and, simultaneously, reduces the amount of funds available.

To reduce that problem, companies write insurance contracts that promise creditors fixed returns while the company is solvent and transfers the assets to the insurers in case of insolvency. That in turn incentives "moral hazard" and "adverse selection" problems due to asymmetric information that insurance companies are more able to cope with, as economies of scale make it economical for screening and monitoring functions to be undertaken by an institution rather than individuals.

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2. Many firms, however, exit the market prior to insolvency by way of liquidation or acquisition (of the firm or of the firm's productive assets). Informal compositions (voluntary transfers of assets or shares to creditors) often occur prior to insolvency. It would be interesting to explore what breakdowns in debtor-creditor bargaining must take place in order for a firm to avoid a voluntary, pre-emptive solution and thus enter formal debt relief procesdings, but this will be outside the scope of this work.

3. Adam Smith (1776) in a well known passage of "The Wealth of Nations" mentions that "After all our complaints of the frecuentcy of bankruptcies, the unhappy men who fall into this misfortune make but a very small part of the whole number engaged in trade, and all other sort of business; not much more perhaps that one in a thousand."

2. Corporate Insolvencies.

In the last few years, financial distress and companies insolvencies' had both risen sharply in many countries and, occasionally, reached levels not seen in previous recessions[4]. Although business failures occur everywhere, in this chapter we will concentrate on corporate indebtedness and company failures in Spain. In 1992 company insolvencies reached 1,642 companies (around 0,18% of the total registered companies) compared with 1,150 (0,13%) and 483 (0,06%) in the equivalent period one and two years earlier. Of the former figure 1135 (0,12%) cases were technical (as well as legal) insolvencies and the remaining 507 (0,06%) bankruptcies (Table 1).

Table 1

Insolvencies and Bankruptcies in Spain: Companies and Liabilities Involved (1955-1992).

	COMPANIES			LIABILITIES		
	Number of Companies Involved			(Thousand Million Pesetas)		
YEAR	Insolvenc.	Bankrupt.	Total Co.	Insolvenc.	Bankrupt.	Total L.
1955	85	58	143	179	45	224
1956	74	38	112	245	64	309
1957	85	46	131	335	75	410
1958	76	45	121	254	12	266
1959	186	46	232	1131	176	1307
1960	92	37	129	427	115	542
1961	91	47	138	741	113	854
1962	112	50	162	796	131	927
1963	165	41	206	1898	107	2005
1964	157	43	200	1750	252	2002
1965	123	39	162	1550	517	2067
1966	145	37	182	5667	203	5870
1967	207	53	260	4565	470	5035
1968	169	51	220	3249	635	3884
1969	172	55	227	3373	188	3561
1970	325	48	373	9922	399	10321
1971	218	47	265	7617	529	8146
1972	142	56	198	3671	924	4595
1973	120	53	173	3767	268	4035
1974	308	56	364	25454	2230	27684
1975	324	72	396	24638	2375	27013
1976	386	100	486	32073	2501	34574
1977	531	87	618	51034	2436	53470
1978	598	117	715	94779	4248	99027
1979	711	126	837	98789	6533	105322
1980	815	133	948	104744	22818	127562
1981	820	143	963	129147	8231	137378
1982	893	152	1045	189183	11056	200239
1983	841	159	1000	170497	18913	189410
1984	814	165	979	131963	20278	152241
1985	459	136	595	101334	13228	114562
1986	231	97	328	54710	8851	63561
1987	192	96	288	46128	6872	53000
1988	154	84	238	38148	21537	59685
1989	168	97	265	36455	3676	40131
1990	351	132	483	100846	23352	124198
1991	798	352	1150	394684	47929	442613
1992	1135	507	1642	1014654	83236	1097890

Source: Instituto Nacional de Estadistica (INE)

[4]. According to Altman, E.I. (1993, p. 3): "As we entered the decade of 1990s corporate distress in the United States, and in many other countries of the world, reached levels not seen since the great depression of the 1930's."

Comprenhensive data for total liabilities of failed firms, which will indicate, whether the companies are of similar size and failure rates (failures as a proportion of active or registered companies) have followed a similar pattern, although it should be noted that the empirical aproach is largely qualitative, in that a degree of causation is inferred without rigorous stadistical test, albeit with theoretical support.

Several factors may affect both corporate insolvencies and bankruptcies, but one important common determinant is the debt level. Both capital leverage (debt as a proportion of assets) and income gearing (interest payments as a proportion of income), with higher levels of indebtedness are associated with a greater likelihood that fixed contractual obligations to creditors (principal plus interest payments) cannot be met. Companies who have taken out loans on illiquid assets or assets whose value subsequently fails are particularly vulnerable.

Corporate indebtedness and the cost of debt has been growing, in Spain as weel as many other countries, but at a much lower level than the rise in corporate defaults will suggest. In the late 1980´s there was a reduction in both, corporate leverage (from almost 55% of total net assets in 1983 to less than 45% in 1990) and the cost of debt (from 14,8% in 1983 to 11,7% in 1988). However with the downturn of the decade the level of indebtedness has been increasing again to almost 50% (49,1%) of net assets and, also, its explicit cost to 12,3%, in 1992[5]. Although much of this increase seems to have been voluntary for financing of new projects, as debt became more available than equity, the fall of aggregate demand during the recession has left companies in an exposed position.

In general, while is possible to find several explanations for companies' willingness to become more indebted in the past few years, it is less clear that the shift in financial structure is actually beneficial in the end. Companies may have made rational decisions regarding the short-term cost of funds, and well informed shareholders and creditors may have been given more opportunity to allocate resources among firms most efficiently but, given that many firms seem to have made limited progress in improving the management of risk in the past decade, their resulting financial position makes them more vulnerable than otherwise in the face of economic downturn.

Broadly speaking, default occurs when a borrower does not pay interest or repay principal due to its creditors. This may lead to bankruptcy (a court supervised process of breaking and rewriting contracts), liquidation (sale of fim's assets and distibution to claimants) or private renegotiations of contracts (workouts). It may arise because shareholders declare themselves unable to pay their debts, either because the market is unwilling to advance more credit or even if further credit is available, leaving the creditors to recover such assets as they may. A key distinction is between default caused by illiquidity (inability to pay debts owing to lack of realisable assets or income) and bankruptcy (negative net worth, liabilities exceed assets).

This has implications at a macroeconomic and corporate level, particularly as the evidence from company accounts suggests that firms in the private sector have increased their leverage and several studies, have found that higher leverage has served to magnify the multiplier in recession[6]. In relation to past experience, the extent of the rise in corporate sector indebtedness has been more limited, but similar conclusions may be valid. Anecdotal evidence, on the causes of recent company failures, suggest that relatively highly levered companies were often unable to survive in the face of sustained high interest rates (iliquidity) and reduced demand during most parts of 1980s and the early 1990s (Table 2).

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5. Data has been collected, since 1983 by the "Central de Balances del Banco de España", a public organization that is part of the Central Bank and collects data from a sample of thousands of companies (7512 in 1990), all over Spain.

6. See Bernanke, B. and Campbell, J. "Is there a corporate debt crisis?", Brookings Papers on Economic Activity, nr.1 (1988).

Table 2

COMPANIES INSOLVENCIES
Causes mentioned by Companies

YEARS	ILIQUIDITY		LACK OF DEMAND		LOW PRODUCTIVITY		OTHER CAUSES	
	Companies	Percentage	Companies	Percentage	Companies	Percentage	Companies	Percentage
1982	598	66,97	159	17,81	28	3,14	108	12,09
1983	573	68,13	125	14,86	25	2,97	118	14,03
1984	589	72,36	100	12,29	23	2,83	102	12,53
1985	314	68,41	72	15,69	15	3,27	58	12,64
1986	154	66,67	36	15,58	2	0,87	39	16,88
1987	121	64,02	32	16,93	4	2,12	32	16,93
1988	101	65,58	21	13,64	4	2,60	28	18,18
1989	109	65,27	20	11,98	3	1,80	35	20,96
1990	233	66,38	57	16,24	5	1,42	56	15,95
1991	475	59,08	150	18,66	17	2,11	162	20,15
1992	661	58,24	226	19,91	22	1,94	226	19,91

Source: Instituto Nacional de Estadística (INE)

2.1 Debt and the economic cycle.

Although the combination of recession and a greater volatility of company incomes is likely to have been the main cause of this rise in defaults, a number of factors, including increased leverage and higher interest rates, may also have contributed to higher corporate default. While the probability of bankruptcy is a positive function of firm leverage, it is affected by other conditions as well[7].

Fisher (1932) attributed the downturn in the business cycle to overindebtedness and deflation. The earlier upswing is caused by an exogenous event leading to improved opportunities for profitable investment. This leads to increased fixed investment, as well as speculation in asset markets for capital gain. The process is debt-financed, mainly by bank loans (also by trade credit) which increases deposits, the money supply, and the price level. Velocity also increases, further fueling the expansion. Rising prices reduce the real value of outstanding debt, offsetting the increase in nominal debt, and encouraging further borrowing. This leads to a state of "overindebtedness", i.e. a degree of indebtedness which multiplies unduly the chances of being insolvent (or alternatively a state of indebtedness implying a negative present value of borrowers in many states of nature).

When agents have insufficient liquid assets to meet liabilities, a crisis can be triggered. Debtors unable to pay debts and refinance positions can be forced by creditors to liquidate (distress selling). Each individual hopes to be better off by liquidating but the community is worse off due to deflation. If normal interest rates are "sticky", real rates increase. Bank runs are triggered as fears for their solvency increase, especially as falling prices reduce companies' net worth and profits and lead to loan defaults. Output and employment fall until bankruptcy has eliminated overindebtedness, or reflationary monetary policy is adopted. The process then repeats itself.

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7. There is of course a link between debt and the underlying economic conditions, including the economic cycles. Leverage is interest sensitive and not exclusively a firm-driven determinant. In a low interest rate environment (vis-a-vis ROI), greater leverage is often advised, even if the volatility of interest rates (which includes falling ROI) that make excessive leverage a problem.

This approach regards financial crises as an essential component of the business cycle. It can be seen as a response to previous "excesses" which can operate through a variety of financial markets. Davis (1992) elaborated Fisher's approach, and introduced the concepts of "fragility", to attempt to clarify the problem of overindebtedness during an upswing. Fragility depends on; first, the mix of hedge and speculative finance; second the liquidity of portfolios; and third, the extent to which ongoing investment is debt-financed. Hedge financing occurs when a unit's cash-flow commitments to debt servicing are such that cash receipts exceed cash payments over a long period; speculative financing entails cash payments over a short period that exceeds cash-flows receipts.

Firms obviously would like to avoid the costs of financial insolvency. The best remedy is to avoid distress in the first place, but this requires the operating activities of the firm to be managed efficiently to its changing environment.

Economic downturns and declines in earnings cannot always be anticipated, but it should be noted, however, that the phenomenon of non-intencional insolvency is not, as is often heard, resulting from the occurrence of "unforseen" events. Companies go bankrupt because of "bad choices" made in the past, these choices make them unable to meet conditions on its debt. Insolvency in an economic sense is, therefore, contingent on the expectations of future cash-flows and on the possibilities of feasible remedies (legal procedures, insurance, etc.).

However, even if a link exists, in theory, between debt and default, in one side, and the economic cycle, on the other, the relationship cannot be studied in isolation, but in the context of other factors that may lead to default. An important factor is the legal framework for insolvencies and bankruptcy procedures. Failure rates are likely to differ between countries as a consequence of the definition of insolvency and the bankruptcy laws.

Although international comparisons do reveal some differences in insolvency laws, which may affect their usage, incidence and cost, there are still a set of common procedures in many countries in Europe and the United States. These procedures range from outright liquidation through a set of informal reorganizations methods that will allow companies to explore their prospects for survival[8]. Caution is, therefore, needed, when making direct comparisons of default levels across countries, even if differences in the level of failure rates are not particularly marked and should not influence trends and determinants of failure, which are the main focus of the current paper.

However, although these factors are important, they are unlikely to explain why default rates have risen so rapidly during 1990-1993 compared with the early and late 1970's[9]. In general, the number of insolvencies and company liquidation rates (insolvencies as a proportion of the total number of companies) are at record levels and higher than the sharp fall in the GDP will suggest.

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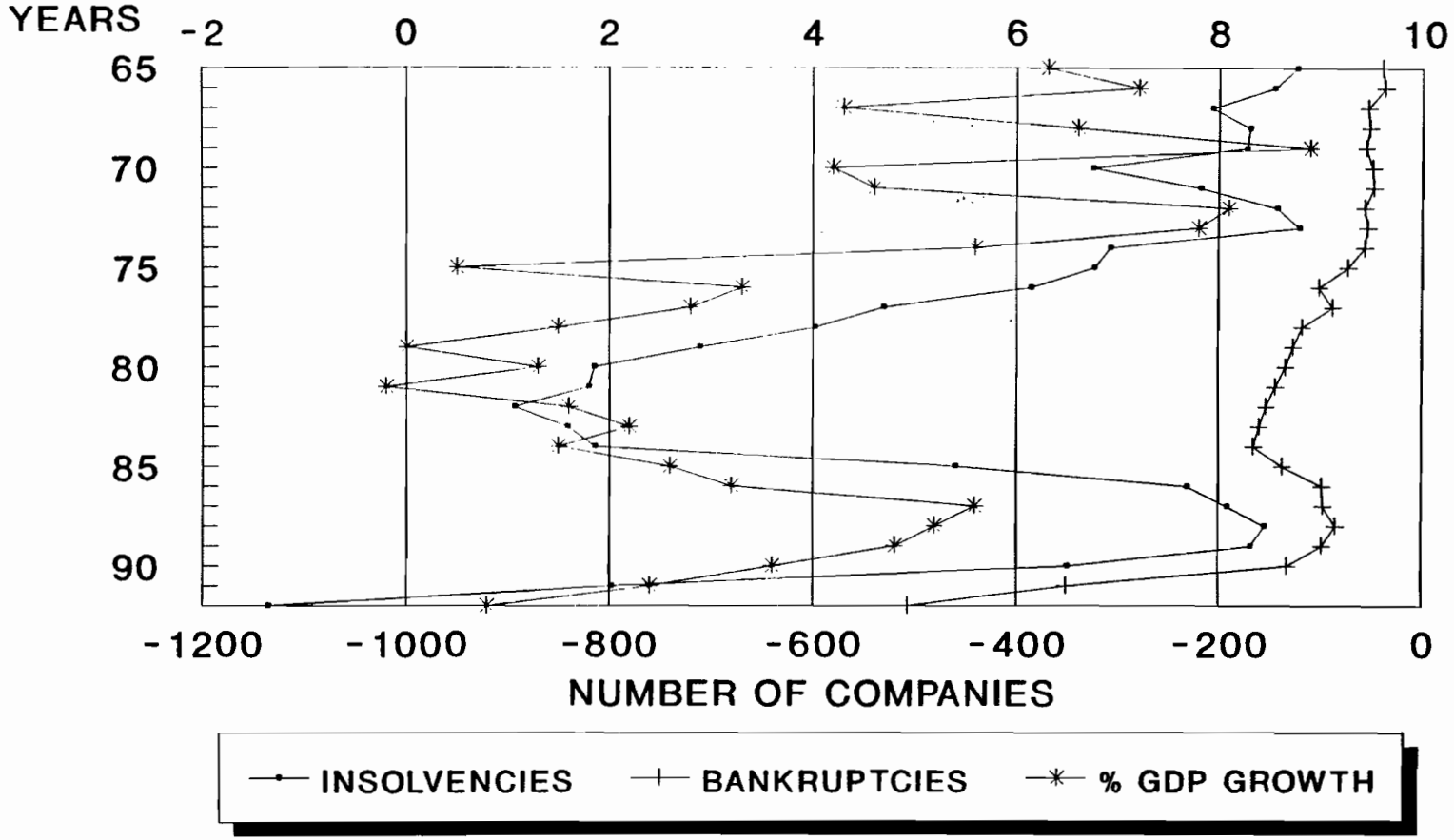
8. Alternative definitions and types of financial distress are discussed in the literature. Coperland and Weston (1992, p. 1145) explained at least the following related technical terms:

Failure: In economic terms failure means a company is losing money and, in some way, may refer to insolvency.
Technical default: Occurs when a firm fails to meet one or more conditions of its debt covenants.
Technical insolvency: Cash-flows are insufficient to meet interest payment or principal on specified dates.
Bankruptcy: Is a legal as well as an accounting measure, meaning a negative net worth (outstanding financial obligations are lower than the "fair value market of firm's assets" or (economically) lower than the present value of expected cash-flows.

9. Evidence of financial distress has become more widespread: Altman (1993, p. 7) provides data for the United States: During the 1970s, about 29,000 to 35,000 business entities filed each year for protection to either liquidate or reorganize under the Backruptcy Laws. The number increased to 44.000 in 1980 and averaged over 60.000 per year from 1983 to 1991, with a high of almost 90.000 in 1987. In Europe more than 233.000 companies filled for insolvency procedures in 1993 (Credit Union Association, Düsseldorf). In some countries as France or Germany, bankruptcies increased by 30% compared with 1992.

GROWTH AND INSOLVENCIES

GDP Growth and Number of Insolvencies



Source: Instituto Nacional de Estadistic

2.2 Credit Risk.

Credit risk is the risk faced by a lender or creditor due to the possibility that the debtor may fail to honor his financial obligation. It is often distinguished from market risk or financial risk resulting from the effect of general market conditions (such as inflation, interest rates or exchange rates) on the value of the repayment.

Though it applies more broadly, credit risk, is most naturally viewed in the context of a standard debt contract. Such a contract demands a non-contingent repayment at a future date; if this repayment is not made, the debtor is declared to be in default. Default may be due to feasibility constraints, if the debtor has insuficient resources to meet the terms of the contract, or it may be due to incentive constraints, if the creditor cannot adequately enforce the contract.

There are many misconceptions regarding debt, because debt, unlike any other "commodity", entails a "promise" to pay an amount and the fulfilment of this promise is by its nature uncertain and can include many additional features. Debt has a negative as well as a positive side. If debt rises significantly relative to firm assets, various added costs are incurred by the firm. In their mildest form, these costs are manifested in the unwillingness of customers and suppliers to deal with the company with the firm under market conditions. In more serious cases, debt holders can be asked to voluntary forgo a portion of their claims to keep the firm solvent. As leverage rises further, the firm can experience technical default or, in the extreme, economic insolvency (Masulis, 1988).

The relation between finance and imperfect information requires considerations of differences in the reward structure associated with debt and equity. In a context where is costly for outside investors to verify the earnings of a firm, a standard debt contract is optimal. Such a contract makes owners residual claimants in all states where the firm is not in default but transfers remaining assets to creditors where default occurs. Equity offers residual claims in non-bankrupt states and nothing in the event of bankruptcy.

The key difficulty is raised by the uncertain possibility that the borrower will default, given asymmetric information, and incomplete contracts[10]. If there were no costs of bankruptcy, default risk would be of no concern to business: assets to pay off the loan would pass smoothly to the lender in the case of default. In practice, resolution of default takes time and effort and companies take measures to avoid it[11]. However, in practice, and due to asymmetries in information, the lender faces a problem of screening potential borrowers before making an advance, and monitoring their behavior after the loan is made, both of which impose costs to the lender. Davis (1992) explain this phenomenon succintly as follows:

"First, the lender needs to choose borrowers of high credit quality before the loan is granted, to minimize his losses due to default, when due to asymmetric information it may not be possible to distinguish good and bad risks. This is the problem of "adverse selection". The classic example of adverse selection is the "lemons problem" which Akerlof (1970) applied to the used-car

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10. Complete contracts would specify the behaviour of the borrower under every possible contingency.

11. That can mean, as well, a loss to the lenders, because what they will get is the anticipated value of the secured assets, not their actual value upon passoff.

market[12]. Related to debt, the problem arises because , with asymmetric information, the lender does not know whether the borrower is a good risk (a good investment project at low risk) or a bad risk (high-risk, low-quality investment project). If the lender cannot distinguish the latter (the lemons), he will charge an interest rate reflecting the average quality of good and bad borrowers. Hence high-quality borrowers pay more than they should, and low rather less. Some quality borrowers will drop out the market, thus worsening the mix. Higher interest rates will only make the problem worse; the mix worsens further as only low-quality borrowers with a low probability of repayment are willing to pay such rates. Suitable collateral[13] may be one way to protect the lender from adverse selection, as it provides compensation even if the borrower turns out to be low-quality, and defaults.

Second, the lender must monitor the borrower after the loan is granted to ensure that the borrower is not acting contrary to his interest during the period that the loan is outstanding. For example the borrower might use the funds to engage in high risk activities that entail only a low probability that the loan will be repaid; this is the problem of "moral hazard". Moral hazard (and the expenditures incurred to overcome it) are a form of the agency costs arising from separation of principal (lender) and agent (borrower). It arises generally from the inconsistent incentives of a contract specifying a fixed value payment between debtor and creditor, particularly given limited liability."

The agency costs arising from the inherent conflict of interes between stockholders and creditors have implications for the existence of various features of debt contracts. Smith and Warner, show that issuing convertible debt (or warrants) can lesser stockholders' incentives to support investments in projects that are unprofitable but increase firm risk. In short, however, debt and equity conflicts of interest can be reduced but not eliminated by existing debt contracts.

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12. The basic point is that, given uncertainty as to whether a second-hand car market is a "lemon", buyers assume all cars are lemons, prices fall, and the sumption is self-fulfilling, because only owners of lemons seek to sell at low prices. Ultimately no trade may take place.

13. Subject to the difficulties of resale and recovery.

3. Limited Liability.

The risk of bankruptcy and financial distress highlights the fact that conflicts of interest between stockholders and various fixed payment claimants exist. These conflicts exist because the firm's fixed claims bear default risk while stockholders have limited liability residual claims and influence the managerial decision process.

The "adverse selection" argument for debt is simply that managers, acting in shareholders' interests, have better knowledge of either f(I) or the distribution or expectation than does the market. The "moral hazard" argument is that it is easier to align the incentives of managers and owners if a company issues debt instead of equity, but the credit risk resulting from limited liability also introduces the possibility that the borrower may take unobservable actions that affect his ability to repay.

To address the role of limited liability on corporate insolvencies, in this context, consider a simple firm that must divide its balancesheet so that,

Balance

Assets (A)	Liabilities (L)
C	E
I	D

Firm liabilities, L, are divided between Equity, E, and Debt, D, being $E+D = L$, and its assets, A, are also separated between cash, C, and investments, I, so that $C+I = A$. Company' value for the shareholders is, therefore,

$$Vt = Et = (At - Dt)$$

Further assume that the return on investment is risky, and will equal k (I), where $E(k) = 1$. All investors are risk neutral, the riskless interest rate equals kr, and the company has a debt of D, payable after the returns on its investment are realized. There is some chance that $[C + k(I)] > D$, so equity has some value, but there is also a chance that k (I) will be too low to pay all debt, and default will occur. Of course, reality is a bit more complicated.

A simple extension is to allow the marginal product of investment to vary, so that an investment of I returns k f(I). This reflects a firm with stochastic assets and liabilities that has a positive probability of insolvency.

Some authors analyze the conflict of interest between debt and equity owners, taking the perspective that the common stock of a levered firm is equivalent to a call option. The value of the debt falls below the value of a fixed return security by the expected value of limited liability[14] to shareholders and can be calculated as the value of an option with exercise price equal to the face value of the principal plus interest and a variability equal to that of the assets of the firm.

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[14]. The importance of limited liability in this context is that the shareholder in the borrowing company benefits from the returns from a successful outcome, but cannot be forced to a share in the losses. The value of the shareholder's equity cannot go below zero.

The firm is observed at a start date, time zero, when A = A0 and L = L0. Assets and liabilities are carried out for one period, when the debt (D) must be discharged (paid). If we define the value of equity as E (A, D, t), and the value of the promise to pay creditors D (A, L, t), where t is the time for maturity of debts. Is easy to see that the value of firm equity is equivalent to an European call option[15]. Thus, E = (A,D,0) = Max. (A-D,0) and at expiration day the equity (E) ownership right is (At - Dt) if the firm is solvent and 0 if the firm is insolvent. The value of the debt for creditors is Min. (Dt, At). If the firm is solvent creditors receive the value of their claims, but if the firm is insolvent the equity owners default, turning over the remaining assets to the creditors.

In this case the payment received at t, is not Dt, but

$$\text{Min. (Dt, At)} = \text{Dt - Max. (Dt-At, 0)}$$

or

$$\text{Max. (At-Dt, 0)} = \text{(At-Dt)} + \text{Max. (Dt-At, 0)}$$

The value of this option will be priced in higher premia on interest rates (k) on risky loans (D0) charged to the firm (shareholders) in solvent states (Merton, 1974), as

$$e^{rt} = \frac{Dt}{D0}$$

then,

$$e^{rt} = \frac{E[\,Dt - \text{Max}\,(Dt-At,\,0)]}{D0}$$

$$Dt - (e^{rt} * D0) = E[\text{Max}\,(Dt-At,\,0)]$$

the value of a firm with limited liability is,

$$E[(At-Dt) + \text{Max. (Dt-At, 0)}] = E(Dt) - (e^{rt} * D0)$$

The right side of equation is the value of an unlimited liability fims with the same assets and that borrows D0 at t. Consequently is financially equivalent for a company to lend at a risky rate k with limited liability or at rate r with unlimited responsability. Attempts to compensate for these agency problems through charging higher interest rates may be counterproductive. Higher interest rates raise the range of states over which firms are bankrupt. Owners choosing low risk investments drop out of the market (adverse selection) and "moral hazard" problems are exacerbated.

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15. As a result of the call-put parity, limited liability can also be seen as a put option: That is, the equity holders can "put" the assets to the debt holder at the "price" of the indebtedness, even when the assets are worth less than this.

As a consequence, higher interest rates may yield lower returns to creditors and as Stiglitz and Weiss (1981) have noted credit rationing may result. Credit rationing is a condition of loan markets in which the lender supply of funds is less than borrower demand at the quoted contract terms. The risk of default is a source of credit rationing if, due to assymetric information, there is no interest rate at which the market for credit can clear and some borrowers are constrained in the amount of credit they can raise.

The implications of these conflict interests have been explored by a number of researchers, including Jensen and Meckling (1976), Myers (1977) and Masulis (1988). The consistent message in these papers is that these conflicts create incentives for stockholders to take actions that benefit themselves at the expense of creditors and that not necessarily maximize firm value.

Jensen and Meckling (1976) argue that rational investors are aware of these conflicts and the possible actions firms can take against creditors. Thus when loans are made they are discounted inmediatly for the expected losses these anticipated actions would induce. This discounting means that, on average, stockholders do not gain from this actions, but firms consistently suffer by making suboptimal decisions. If the firm is confronted with a choice between investment and debt reduction, it will continue to invest past the efficient point. Then creditors will prefer a debt reduction to investment and, since there are no efficiencies, stockholders must prefer investment.

However, if the actions of the owners (managers or shareholders) are unobservable several complications arise. First, **asset substitution**. Since the owner only benefits from returns in non-default states, risky investments of given mean return will be chosen in preference to safer investments (moral hazard). Owners benefit from the upside gains from high risk investments but do not bear the costs of downside losses. Those are inflicted on creditors rather than shareholders. This is the standard result that debt can cause firms to take on uneconomic projects simply to increase risk and shift wealth from creditors to stockholders.

Secondly, **underinvestment**. Owners do not benefit from the effort that they apply to improve returns in insolvency states. Those accrue for creditors not owners. Since some of the returns to investments accrue to bondholders in bankrupt states, firms may be discouraged from carrying out what would otherwise be profitable investments (Myers, 1977).

Thirdly, **claim dilution**. There is an incentive for owners to issue debt that is senior to existing debt. Senior debt has priority over existing debt in the event of bankruptcy; it can therefore be issued on more favorable terms than existing debt which leaves existing creditors' claims intact in the event of bankruptcy.

Modern theory identifies the market failures created by moral hazard and adverse selection as a consequence of assymetric information. Assymetric information leads to credit rationing when the interest rate or the loan size chosen by the lender affects borrower behaviour (moral hazard) or the riskiness of the applicant (adverse selection).

These divergences of interests between creditor and owners create incentives to bind owners' interest to those of creditors. One way to do this is to put aside **collateral** (property of the borrower wich must be forfaited to the creditor in case of default) or to use **covenants** preventing owners to take actions that are detrimental to the interest of creditors. However, these provisions can moderate but not eliminate agency problems. If debt markets are competitive, shareholders will pay (in the initial borrowing terms) for any investment inefficiencies.

Of course, both debtors and creditors are aware of all these problems when they write their initial contracts. Thus firms, employ a variety of protective covenants to avoid credit rationing and aimed at assuring creditors that they will be well treated in case of default. One of them, perhaps the most ancient for the purpose of shifting risks, is insurance.

4. Credit Insurance.

In any economic situation, there is a responsible agent on whom the burden of any given risk fall in the first instance. In case of default the owner of the business typically is supposed to assume all the risks of uncertainty, paying out the unexpected losses and enjoying the unexpected gains. Remedies, however, are disruptive and society has long recognized the need for permitting to shed some risks through a series of institutions (market mechanisms, legal procedures, etc.)

Insurance itself, is an early and important example of such an institution, but other ways for risk shifting have also emerged. The most important institution is, as we have seen, limited liability. By this means, the owner of a business could divest himself of some of the risks, permitting others to share in the benefits and losses.

As Arrow (1971) mentioned in a seminal article "The possibility of shifting risks, of insurance in the broadest sense, permits creditors to engage in risky activities which they would not otherwise undertake." Under such a system credit activity and risk-bearing can be divorced, each being carried out by the one or ones best qualified. It must be pointed out, though, that the range of insurance policies required by this ideal system is indeed very wide and one can see that not all the risks can be effectively shifted through the market.

The economic system, therefore, has not developed a more completely adequate set of markets for risk-bearing and insurance operations are limited in several ways and for many reasons:

In the first place, insurance is limited as to scope. Many risks are classified as "uninsurable", although this concept is not absolute. Secondly, insurance is frequently limited as to the amount of actual loss, or even less in many cases. A third limitation of insurance from the economic point of view is its resort to direct controls over the insured. But the "moral hazard" factor is perhaps the most important: The insurance policy might itself change incentives and therefore the probabilities upon which the insurance company has relied.

Risk enters necessarily into all credit contracts, but only as one element among others. Any loan has, after all, the risk of default, and the rate of interest is in fact greater on loans judged risky by the market than for safer ones; the interest rate differential is in effect a premium paid by the borrower for insurance against default, the lender being simultaneously the insurer.

The incomplete shifting of risks gives rise to problems which have been recognized by society and solved in different ways. A corporation or its creditors would wish to be insured against default arising in unforseen circumstances. A solution to the inability to shift risks is represented by bankruptcy and limited liability laws. The law in effect requires creditors to assume some risks of the debtor; it does not leave him free to negotiate a risk-free investment and it provides for an inalienable limitation of risks to the debtor. The law thus steps in and forces a risk-shifting not created by the market place.

There are reasons for lenders, however, to shift the risks to institutions in the form of credit insurance. If companies dislike uncertainty and they can find some institution to whom the cost of bearing the uncertainty is less than for them, then there will be some trade possible, by which the party assumes the risk, the company pays a fixed premium, and both are better off. Insurance companies are better placed to take screening and monitoring functions, as economies of scale make it economical for these tasks to be undertaken by an institution rather than individuals.

A second solution comes through the shifting of trade and credit risk to an insurance company: Credit insurance. Corporations regularly enter into explicit and implicit long-term contracts (trade credit contracts[16], labor and service contracts, product guarantees, etc.). Creditors, employees, customers and suppliers will make rational forecasts of the payoffs under their respective contracts, reflecting the forecast in their reservations prices. With no contracting costs, if the firm chooses to purchase credit insurance, thus reducing the probability of contract noncompliance, creditors, suppliers and employees' demand prices change to reflect the different payoffs. Consequently, the sum of the contract price changes must equal the insurance default premium and the value of the firm will not be affected[17].

At first sight, this seems to work in the right direction, as claimholders with undivisible claims, like customers, trade creditors or managers and employees, are at comparative disadvantage in risk bearing[18]. If the contracting process is expensive, incentives exist to allocate risk to those agents who have a comparative advantage in risk bearing. The equityholders and bondholders of the corporation have divisible claims which are traded in organized secondary markets.

We suggest that insurance firms have a comparative advantage in monitoring certain aspects of the firm's real activities and in claims administration services (economies of scale and gains from specialization, legal representation and adjusters' network, etc.) so that a firm which purchases insurance will engage in a different set of activities that a firm which does not[19].

Insurance contracts allow the firm to shift risk to the insurance company, achieving an efficient location of risk for the firm's other claimholders. Credit insurance may, therefore, reduce risk premium in companies' cost of capital and thus, our analyses suggest, the higher the employees, customers and suppliers' fraction of the claims to the firm's output, the higher the probability that the firm will purchase insurance.

The existence of transaction costs of bankruptcy can induce firms with widely dispersed ownership to purchase credit insurance, even if the premium is actuarially unfair, provided the difference is smaller than the present value of the reduction in expected bankruptcy costs. Evidence suggests that bankruptcies' costs are a small percentage of firm value and less than proportional to firm size[20]. Small corporations will grant rather than receive trade credit (due to lack of bargaining power) and therefore, they are more likely to purchase insurance than large firms. However, even small transactions costs of bankruptcy will be enough to induce firms to purchase insurance.

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16. Trade credit, provided between non-financial firms is particularly important in this respect because the amount outstanding is, generally, of the same order of magnitud as business loans.

17. Not all creditors, however, make use of credit insurance contracts, as some have some alternatives: Workmen's and managers compensation laws have been enacted in many countries. These laws impose on employers the responsability of providing insurance's funds covering wages, salaries and different compensations. Deposit Insurance provides protection for customers' against bank's default and several other financial responsability insurance contracts are regularly purchased by corporations. .

18. We must assume that is more expensive for the employees, suppliers and customers to purchase the insurance than for the firm, because of economies of scale and "moral hazard" problems.

19. The extent of these protective measures taken by insunce companies is limited by the contracting costs of their originating, monitoring and enforcing.

20. Gordon and Malkiel (1981) estimated direct corporate bankruptcy costs to be between 2,5 and 9% of the market value of the firm, Altman (1984) suggested direct corporate bankruptcy costs of 6% of assets. Weiss(1990) offers more recent evidence again showing low direct costs of around 3% of assets. Warner (1977) consider on empirical evidence that, even for large firms, the direct legal and administrative costs default are so low as to be trivial.

Insurance, however, involves a change in the attitudes of management and creditors, which in turn, raises a problem of "moral hazard". Credit insurance may act under certain circumstances as an incentive to bankruptcy as allows managers to gamble with creditor's money even when doing so is economically inefficient or against insurers' interest.

Higher variance of returns may result in a greater chance for benefits and losses. The entrepreneur will enjoy the benefit of the increased chance of high returns, while once the probability of default is spotted with positive probability, the increased chance of loss is borne (to at least some degree) by the insurer.

In this world, if insurance premium is low enough, it may be that all companies wish to write credit insurance contracts, but that insurers have an insuffient amount of capital to satisfy demand at this price. Under normal circumstances, the response would be to raise insurance premia, reducing the demand. However, entrepreneurs with the riskiest projects will be willing to pay for the higher premia.

When companies go into default, this may have direct effects on other companies that are suppliers (or customers) of goods and services. Inmediate problems may arise that threaten therir liquidity; if stock has been received but not paid for, then the supplier may not be repaid in full and/or be paid late. Such potential problems, even if not realized, may in turn make suppliers of the defaulting firm unwilling to extend credit.

In many cases, the default premium paid by insured creditors will increase insurance prices to unsustainable levels. This means that, by raising the insurance premia, the set of companies able to take insurance at the higher level may change, in particular when companies are facing economic and financial difficulties and they need it more. The result is that by raising insurance premia it generates a lower rate of return (due to higher claims) that at the lower price level, when the increased default risk is accounted for. This is the well known problem of "adverse selection". What we observe is that the failure of the price system to handle risk-bearing adequately leads to a diminished use of market prices, even in contexts where they would be most useful[21].

Apparently this principle explains the limitations of both credit insurance in particular and risk-shifting through the market in general. The problem is that the insurer, or more broadly, the risk bearer cannot completely define his risks; in most circumstances he only observes a result which is a mixture of the unavoidable risks, against which he is willing to insure and human decision.

If the motives of the insured are to reduce losses, then the insurance company has little problem, but if the insurance policy may, as we have seen, lead to a motive for increased loss, and then the insurer or risk-bearer is bearing socially unnecessary costs. Either he will refrain from insuring or he will resort to direct inspection and control, to make as certain as he can that the insured is minimizing all losses (Arrow, 1971).

Continuation of the firm is itself a risky investment. The coalition of insured creditors and shareholders gets the upside benefit, while misinformed insurers disproportionately bear the downside costs. Since the bankruptcy decision rests with managers and creditors, the firm's insurers cannot prevent it from continuing to operate, as long as premia is paid. When firms finally enter bankruptcy, most or all of their assets are subject to secured creditors, so that payoff rates to unsecured creditors and recoveries by insurance companies are very low[22].

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[21]. That in turn may cause problems of what we can call "insurance rationing".

[22]. White (1988) found that unsecured creditors in the US received an average payoff rate of only 4 percent.

5. Some empirical results.

Empirical tests of the use and effects of credit insurance generally use indirect methods based on proxies and other methods with an assumed relationship to credit insurance. It´s not easy to obtain data directly from insurers because of their reluctance to provide the relevant figures for the companies involved and the cost of cover under different circumstances. A more rigorous empirical approach is difficult to employ due to the lack of proper information. The limitations of the analysis should, therefore, to be borne in mind.

The main source of information regarding companies' insurance costs is the "Cost of Risk Survey", published by RIMS (Risk and Insurance Management Society) every year in the United States and Canada. The survey documents the total cost of risk for all participants, and by industry group (27) and financial size. Data collected for years 1990 and 1991 was sent to more than 4200 members of the organization, with a total response over 800 firms (around 20% of the total), one hundred of them Canadian.

Export and Domestic Credit Insurance premium data was collected for almost 400 companies under the generic name of Property Risk Financing Costs and represented on average 0,01861 of the firms total revenues (0,02228 in 1990) and 0,01169 of total assets (0,00916 in 1990), a figure higher than all other property lines except for property damage.

A research, similar in pattern to RIMS' survey, was conducted in 1991, to cover more than 2000 companies all over Spain, by Mapfre and AGERS[23] (the Spanish Association of Risk and Insurance Management) to find out the types of insurance being purchased by Spanish corporations and the average cost of cover (including administrative costs).

The results of this survey, regarding Credit Insurance, are as follows:

Table 3

Kind of Insurance Purchased	Percentage of Companies Insured (%)
Credit Insurance	8,2%
Export Credit Insurance	23,0%
Financial Guarantee Insurance	16,7%
Exchange Risk Insurance	16,7%

Empirical evidence therefore suggests, that only one out of six of companies purchases credit related insurance. In fact export credit insurance is being favored by policyholders, with domestic credit insurance lagging far behind. There are several explanations for these facts as exports are considered riskier than domestic sales, and export credit insurance is often subsidized by Government's agencies, to cover for political risk (the importer's country being unable or unwilling to pay).

Insurance cost is the highest among the risks covered by corporations with premia of more than 0,10% (0,112%) of sales (the cost of all risk covered is around 1,00%, including administrative costs), with Construction and Public Works companies paying the higher premia (0,2411%). Evidence also suggests than the size of the company may also affect the cost of insurance being lower for smaller firms (0,0795%) that for big corporations (0,1589%), as predicted by theory.

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[23] Moya, M.D. (1993); "El coste de los riesgos en la empresa española. 1991"; Gerencia de Riesgos; pp. 57-65, Fundación Mapfre Estudios, Madrid

The exteded opinion is that credit risk in spite of its efective role to switch risk from firms and creditors to insurance companies, is not purchased by corporations as expected, mainly due to the "adverse selection" and "moral hazard" problems already mentioned that lead insurance companies to increase premia during turbulent periods of the economy.

A practical way to overcome these problems is to pool insurance policies across a large number of borrowers and in a longer span of time. Diversification eliminates the risk of insuring in any one firm and allows insurance companies to offer creditors standard insurance contracts. The need for close monitoring is therefore eliminated by the ability of insurers to diversify risks. However and as mentioned earlier, this is not easy in many countries, due to lack of information regarding borrower's characteristics and activities.

To the extent that credit risk is individual specific, it implies that credit markets cannot function as anonymous, price-taking markets in the neoclassical sense. In general, both the identity of the seller and the quantity of credit sold are crucial determinants of its value. The importance of the seller's identity and characteristics also impies a role for information production, wich may be an important service provided by financial intermediaries. Many private firms provide information regarding the relative credit risk of issued by corporations (as Moody´s and Standard & Poor's rating agencies among others) but few provide reliable services regarding trade credit of individual firms.

Another means is to share the risks with the insured themselves. If a complete absence of risk-shifting is bad because inhibits the undertaking of risky enterprises and if the total risk-shifting is bad because it reduces the incentives for their success, then it is reasonable to suggest that partial risk-shifting might be the best. This is precisely what is meant by the coinsurance measures being taken by credit insurers in many countries.

5. Summary and concluding remarks.

Company insolvencies have increased very sharply in the last few years, and currently stand at record levels in many countries. Although the combination of recession and high interest rates is likely to have been the main cause of this rise in defaults, the more moderate increases in company failures, which have accompanied more severe downturns in the past, suggests that other factors may also have been important.

Several factors may severely affect corporate default. One important common determinant is the general economic conditions for business (GDP growth, inflation, etc.), another is the level of debt. Both capital leverage (debt as a proportion of assets) and income gearing (interest payments as a proportion of income), together with higher levels of indebtedness, may lead to insolvency.

Recent developments in the theory of finance, have advanced considerably our understanding of the nature and role of debt. Although most of the theory is set out in terms of corporate finance, it is also directly applicable to financial institutions and accountancy. Many of the features indicated can be understood as means of overcoming uncertainty, transaction costs, and incomplete contracts, arising from asymmetric information between the parties concerned. Debt, unlike any other "commodity", entails a "promise" to pay an amount and the fulfilment of this promise is, by its nature, uncertain. Considering rational expectations and asymmetric information, there is no reason to assume that choices made by companies in the past are consistent with the observed results, hence the possibility of default.

The best remedy for to avoid insolvency is to avoid distress in the first place but this requires successful management of the firm in all critical functions and, therefore, knowledge of the effects of a changing environment on the firm. The risk of bankruptcy and financial distress highlights the fact that conflicts of interest between stockholders and various fixed payment claimants exist. These conflicts exist because the firm's fixed claims bear default risk while stockholders have limited liability residual claims and influence the managerial decision process.

The "adverse selection" argument for debt is simply that managers, acting in shareholders' interests, have better knowledge of expected future cash-flows than does the market. Asymmetric information, however, does not fully explain one aspect of corporate finance, the role of credit insurance in business insolvency. Credit insurance promise creditors fixed returns so long as the company is solvent and transfers the assets to the insurers in the event of insolvency. The lack of adequate control, by lenders and creditors, on management behavior, because of the credit risk cover, may lead to "moral hazard" problems that can eventually end in the company insolvency.

Bankruptcy as such, therefore, does not create wealth transfers to shareholders or undermine the provisions of debt finance, but it creates a conflict of interest between creditors and shareholders.

Given the relevance of this concept and application in company valuation we suggest that limited liability and insurance contracts may have an important role to play in companies' insolvency. In particular, the use of credit insurance is likely to reduce the firms' cost of capital and thus the probability of default. Asymmetric information and "moral hazard" problems should be taken into account, as they also affect credit insurance. Insurance companies, due to specialization and economies of scale, are better suited for screening and monitoring functions than individuals.

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