LENDER'S LIABILITY FOR

POLLUTION CONTROL
Chapter 1

THEORIES OF POLLUTION CONTROL

Economic policy prescriptions to the problem of pollution are based on welfare economic models. These models view pollution as an “externality” problem. All these ideas have emanated from the pioneering work of Pigou (1920); ‘The Economics Of Welfare’. It suggested a tax on the output of an activity which generates negative externality (pollution). By choosing an appropriate tax rate, the behaviour of the polluter can be changed so that his production decisions conform to that of a social welfare maximiser.

Coase (1960), attributes the problem of pollution to absence of property rights for environmental resources and the existence of transaction costs which impede the smooth functioning of markets. He advocates a merely supervisory role for the government in doing away with these two maladies after the rights of citizens have been appropriately amended. However, it was not until the 1980s, that in spite of the works of Pigou and Coase, any substantial practical policy formulation on the environmental front was undertaken (Cropper & Oates, 1992). Early attempts in US and Europe at environmental pollution control policy had relied on extending the concept of cost-benefit analysis for pollution control. Cropper and Oates (1992) observes that the American amendments to the Clean Air Act (1970) and the Clean Water Act (1972) did away the weighing of cost and benefits in setting ambient standards of the environment. These are in essence the command and control (CAC henceforth) policies for pollution abatement.

The interaction of man and environment in their historical settings in public hygiene programmes of the 19th Century of UK and the Netherlands, have been attributed as the basis for reliance on direct regulations (Opschoor and Vos, 1989). A cost-benefit analysis is inappropriate because revenues from charges are also uncertain. Stavins and Whitehead (1992) attributes use of CAC due to adversarial attitude on the part of the activists who characterised pollution more as a by-product of modern civilisation.
The main difficulty of CAC approach has been its cost inefficiency relative to MBI, in whose favour there has been a clear shift of preference in recent years. Establishing and enforcing standards are all hall-marks of administrative regulations of pollution. These standards are set for most common pollutants and are source specific generally. The CAC type of regulation can be justified for products that are hazardous and toxic. Opschoor and Vos (1989) observe ‘direct Regulation of Social Processes seems to have reached the limit of its effectiveness or even to have gone beyond that. And this calls for deregulation or at least regulatory reforms.’ They stress on the need for internalising environmental concerns in private decision makers behaviour. They also feel that its time to develop and introduce instruments for environmental policy that render environmental concern to be in the polluters own interest.

A gradual, though discernable, shift from the CAC type of regulation towards regulation based on use of economic instruments is noticed. In US, the emission trading programme has gained popularity. OECD member nations opted for a consistent application of the polluter-pays-principle and a more effective use of economic instruments in conjunction with regulations. In India, the ‘Policy Statement for Abatement of Pollution’ of February 1992, aims at giving ‘industries and consumers clear signals about the cost of using environmental and natural resources’. It expects that ‘market oriented price mechanisms will influence behaviour to avoid excessive use of natural resources.’

The normative theory of externalities, which lays the foundation for use of MBI s in pollution control goes back to the pioneering work of Pigou (1920). In his analysis, the social optimum and the private optimum differ. This is because the former is based on the equality between marginal social cost and marginal social benefit. The latter is based on the condition of equality between marginal private cost and marginal private benefit. Externality refers to the divergence between social and private benefits and costs. Pigou recommended taxes on activities generating negative externalities and subsidies on activities generating positive externalities. This he argued would internalise externalities and bring the choice of the firm in line with what it would have been had it faced the true social cost (benefit) of production.
This Pigouvian insight forms the basis of much further theoretical exploration and the design of environmental policies which attempt to make the polluter pay (Baumol and Oates; 1988, Cropper and Oates; 1992). Industries have been considered as major polluters in almost all literature. Practicability of implementing the Pigouvian principle for controlling pollution does not seem to be an easy task. In an industry with firms of different vintages, the reaction patterns of different firms to the tax will differ and will be distributed over time. The market structure and the type of regulation will also influence the responses of the firms. These problems make the task of deciding the level of tax and assessing the effect of the tax on pollution abatement in an industry difficult. However, there are three lessons which can be derived from Cropper and Oates (1992) model based on Pigouvian principle. Firstly, a social optimum can have a positive amount of pollution. Secondly, an important criterion in the choice of instruments for pollution abatement is cost-effectiveness. This is because pollution control involves the use of scarce resources. The third lesson is that Pigouvian taxes which make the polluter pay are adequate to support a socially optimal allocation and compensation of the victims is not necessary. For, under asymmetric information, compensating firms could give rise to problems of moral hazard (Mehta et. al. 1996).

As an alternative to the Pigouvian tax, an environmental protection agency can issue tradeable permits. This would be equal in aggregate amount to a socially optimal level of pollution and allow the firms to bid for them within a defined ‘bubble’. Baumol and Oates and others have shown that under the assumption of perfect knowledge, marketable emission permits are an equivalent alternative to the Pigouvian tax. However, this may not hold true if the pollutant is not uniformly dispersed or there are market imperfections. In the presence of uncertainty regarding the costs and benefits of pollution control, Weitzman (1974) analysed the choice between price and quantity instruments. Assuming that the marginal cost and benefit functions are linear with additive error terms, he showed that the expected welfare gain in the pollution abatement is larger under a system of marketable permits, when the marginal benefit curve has greater absolute slope than the slope of the marginal cost curve. The expected welfare gain is larger under a unit tax when the marginal abatement cost curve has greater slope than absolute slope of the marginal benefit
curve. A mixture of marketable permits supplemented by an effluent fee and a subsidy when the regulator is uncertain about the marginal abatement cost function of polluters is recommended by Roberts and Spencer (1976).

Coase’s Theorem says that while the initial assignments of legal rights are necessary for effecting market transactions, the ultimate outcome which maximises the value of production, is dependent on the extent of transaction cost. The pricing system is assumed to work without cost. It emphasises the reciprocal nature of the externalities problem. It draws attention to the trade-off between the values of externalities to the 'injurer' and to the victims at the margin. Coase assigns an important role to the state in defining, enforcing property rights and in mitigating transaction costs.

The difference between Pigouvian and the Coasean approach lies in the mechanism proposed for solving the externalities. The government agency bears the onus of identifying the polluter and estimating the marginal abatement cost curve as well as gathering information about the damage caused and estimating the marginal benefit from abatement in the Pigouvian framework. The tax is set at the point of intersection of the two curves. The same agency is responsible for monitoring, levying and collecting the tax and imposing penalty in case of non-compliance. The Coasean approach relies on the free market itself to facilitate bargaining between the polluter and the victim. During this stage, transaction cost arises in monitoring and measurement of pollution, organising the affected parties and reaching a solution. In case mutual settlement is not reached, the case reaches the court. Costs and benefits accruing to both parties are looked into by lawyers and judges. Legal solutions are reached after verifying claims of both parties. The choice between the two approaches is guided by the relative cost of implementation.

Only since the recent past has economists been developing methodologies to measure the benefits of goods such as clean air or water, that are not available in the market. These can be classified under two broad categories following Cropper and Oates (1992);
(a) ‘indirect methods which attempt to infer from actual choices, such as choosing where to live, the value people place on environmental goods’ and
Valuation of benefits for environmental protection is very difficult in countries like India with non-existence of markets for most environmental resources. Also, because of market imperfections for factors and intermediate inputs. Moreover India has not yet initiated large-scale research on application of Contingent Valuation Techniques.

It is increasingly felt that economic instruments such as charges or permits are combined with direct regulation measures like standards. A number of alternative economic instruments are designed to internalise the external costs of pollution, making the polluter pay and at the same time minimise the cost of a given level of abatement under given conditions with regard to tastes, production and abatement costs etc. These include price instruments such as various forms of charges, subsidies, deposit refund systems and liabilities which fix prices and lets the agent respond through quantity adjustments, or quantity instruments like tradeable permits which fix emission quantities and allow agents to clear the pollution markets through price adjustments.

In 1992, at Rio-de-Janeiro, the UN Conference on Environment and Development, specified the following objectives of environmental policy:

1. to incorporate environmental costs in the decision of producers and consumers, to reverse the tendency to treat the environment as ‘free good’ and to pass these costs on to other parts of society, other countries or to future generations;
2. to move more fully towards the integration of social and environmental costs into economic activities, so that prices will appropriately reflect the relative scarcity and total value of resources and contribute towards the prevention of environmental degradation; and
3. to include, wherever appropriate, the use of market principles in the framing of economic instruments and policies to pursue sustainable development (Agenda 21, Chap 8, P:85)

The 'Policy Statement' for Abatement of Pollution' of India, 1992, too favours the use of MBIs for pollution control wherever feasible. Mehta et. al. (1996) in their exposition categorise design and implementation of pollution policies under the
following heads: (a) direct economic instruments and (b) indirect economic instruments.

Direct economic instruments are so called because they are imposed directly on the level of pollution that occurs. The direct economic instruments can be listed as:
1. Pollution Charges or taxes - Here the charges provides an incentive to the polluting firm to reduce pollution upto a point at which its marginal abatement cost equals the charged rate.
2. User Charges - This follows a two-part tariff-structure:(i) a flat rate independent of volume of waste water & (ii) a charge per unit of waste water discharged. These are used mainly for the disposal of waste water and solid waste.
3. Marketable Pollution Permits - Under this a pollution control agency determines a target level of environmental quality and translates this into the total amount of allowable emission that can be discharged. The agency then allots/sells/auctions the rights to discharge units of pollution to firms in the form of permits. Subsequently, these rights can be bought and sold, subject to an overall ceiling of allowable discharges which has been fixed a priori.
4. Deposit Refund System - These systems imply that potential 'injurers' are subjected to a tax (deposit) in the amount of the potential damage and receive a subsidy (refund) equally large in terms of present value if certain conditions are met. A price for the right to inflict negative external effects is set by the regulator.
5. Strict Liability - Liability is recognised as a law to combat pollution. Imposition of liability shifts the cost of risk to the polluter and he finds that engaging in preventive measures makes him better off.

Indirect instruments are those which are used to control pollution not by the control of pollution but by either imposing restrictions on the sources of pollution or by providing incentives for using non-polluting inputs/technologies. The Indirect Economic Instruments are --
1. Product Tax or Charges - The objective of a cleaner environment can be achieved either by taxing the output produced or the pollutant if both (output and pollutant) are joint products.
2. Input tax or Charges - An input tax is a tax on any input whose use in the process of production generates pollution. It is easier to measure and monitor.
3. Taxes on Complements and Subsidies for Substitutes - This calls for taxing products and their complements at higher rates for environmentally damaging inputs or outputs and lower rates for environment friendly inputs and outputs.

4. Fiscal Incentives - It ranges from rebates in excise and customs duty of pollution abatement equipment. Accelerated depreciation policy for these and other incentives of the like.

In India, fiscal incentives used for pollution control can be listed as --

- Specified pollution control equipment manufactured in India is eligible for a rebate under the central excise duty at a maximum rate of 5%;
- 100 accelerated depreciation is allowed for on selected pollution control equipment;
- Rebates on state sales taxes for specified pollution control equipment;
- Financial assistance is provided to industrial estates/clusters of small-scale industries to set-up common effluent treatment plants;
- Financial assistance provided to small-scale industries for adoption of clean technologies;
- Loans, grants and technical assistance provided under USAID funded Trade in Environmental Services and Technologies Programme to Indian firms to collaborate with US companies for pollution control technologies and services.

The Report submitted by the Task Force set up by Ministry of Environment and Forest of the Government of India to evaluate MBIs for Industrial Pollution Abatement recommends --

1. For small, dispersed sources effluents, pollution taxes should be in accordance with the polluter-pays-principle.

2. Tradeable permits to be used for large firms provided there exists an adequate number of firms in the market to avoid problem of thin markets. This is to be introduced on a pilot basis and later to be extended for more regions and pollutants.

Under formal regulation, the government acts as an agent for the community in controlling pollution. In the absence of such an institutional agent, a conventional analysis would assume that pollution is cost-less and essentially unconstrained. The Coasean principle of the polluter paying for the damages created is diluted by the
absence of a monitoring agency. Another form in which the Coasean principle is applicable and focused upon here is the concept of lender liability.

**Lender Liability:**

In the case of lender liability, the polluter-pays-principle is replaced by the idea of 'provider-pays-principle'. The provider of funds for the project, which pollutes gives credence to the concept of lender liability. The lender of the fund is no government agency but an independent banking or financial institution who would be held liable for any pollution that occurs from the project which it has financed. There are instances where the polluting firms have no monetary capacity to compensate the victims resulting from their polluting activities or to pay for the clean-up activities. In such cases the onus lies on the government to pay for either the clean up activities or compensate the victims.

The case of 'judgement proof' firms are quite common. These are firms, which can cause accidents during the process of production and become bankrupt. They do not have sufficient funds/assets left to compensate the victim(s) of the accident. 'Judgement proof-ness' is surely a cause for concern because of the fact that it results in a reduced incentive for the firm to be cautious.

There can be various ways of dealing with this issue at the policy level. Whatever be the mode of dealing with this problem, monitoring the production process becomes important. Monitoring can be done either by a government agency or a concerned party. Cases of bribing and dishonesty in monitoring are quite common phenomenon in any country, especially India. The other option that remains is that of a concerned party. It can take the form of either an insurance company or a lender who is liable in any form for the damage done by the producer while carrying out the process of production.

To avoid such liabilities, the government would find it advantageous on its part to find an agency which would make an environmental assessment of the project to be undertaken and thus avoid the possibilities of any large-scale mishap through polluting activities of potentially hazardous firms. In the event such a mishap occurs they should be able to compensate the victims should such a situation arise. These agencies have necessarily to be 'deep-pockets' and need not be a part of the firm's
management. Lenders of funds to any project fits quite well in such a role; they are ‘deep-pockets’ and are not a part of the firm’s management.

The lender can be held liable either in part or for the whole damage done. Consequently, there arise the cases of partial or complete lender liability. Cases where victims of environmental hazards received compensation for the damage caused is not new even in India. The concept of lender liability is certainly a new concept in India. The introduction of Comprehensive Environmental Response, Compensation and Liability Act, (CERCLA) in the US and that of Chapter 12 bankruptcy, which makes the use of lender liability suits more frequent have shown and paved the way for their introduction in India. This will help in better monitoring of the production processes adopted by the producers and thus in better control of industrial production.

In the case of lender liability, it pays the lender to be cautious in monitoring the production process adopted by the borrower while setting up his production system. He will use all that is under his control to see that the probability of the occurrence of the accident is minimised and subsequently the chances of his having to pay compensation to the victims created in the process.

The possibility that banks and other lending institutions might be held liable for cleanup of hazardous wastes at facilities in which they hold a security interest has sent shock waves through the financial community. In recent court case, a lending institution was held liable simply by virtue of its capacity to influence the handling of hazardous waste at the contaminated facility, despite the fact that it had no direct involvement with waste management at the site. This ruling defines the potential for lender liability very broadly, and, since lenders tend to be ‘deep pockets’, there is a fear that it will lead to greatly expanded financial risks for lending institutions.

The theoretical literature dealing with liability as a policy instrument for the most part descends from the important and challenging theorem of Coase on the irrelevance of property rights to efficiency outcomes in environmental conflicts. This line of descent is hardly surprising, since the right to enjoy property free from external interference and the entitlement to liability for interference that do occur are closely related through distinct possibilities for dealing with conflicts over the use of property generally. An attempt is made here to discuss some of the related issues related with lender liability for hazardous cleanup. Of prime important is a description of the
institutional setting in which the potential for liability arises. Then there are the alleged impacts of holding lenders liable.

**The Institutional Set-up:**

Lender liability to control polluting activities is still in a nascent stage in India. It has been imposed in the US under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). This has been re-authorised in 1986 and extended in 1991. This is better known as the ‘Superfund’. It instructs the U.S. Environmental Protection Agency to identify and list hazardous waste sites that pose a threat to human health and the environment, track down potentially responsible parties, and force them to clean up or to reimburse the EPA for the clean up already initiated by the agency. The EPA has generally interpreted the law to apply to closed and abandoned hazardous waste sites.

In India, introducing lender liability to control and/or check pollution will surely be met with reservation both by the policy-makers and the owner-entrepreneurs. Lender liability calls for potentially responsible parties to finance cleanup of contaminated sites directly or to reimburse the government authority for costs it incurs in cleaning up operations. ‘Potential responsible parties’ under the CERCLA (and for that matter anywhere) includes four categories: (i) current owners and operators at the site, (ii) owners and operators of the site at the time of the waste disposal, (iii) generators of the waste, and (iv) transporters of the waste. The potential for lender liability arises from the first category since the security interest of a lending institution could theoretically make it a current owner or operator of the contaminated site. The main issue thus relates to the definition of ‘participation’ in management that would invalidate exemption of a secured creditor; who hold “indicia of ownership without participating in the management” of a site. Regardless of the degree to which the bank had ‘managed’ the hazardous waste on the site, the lender can be deemed to be an owner by virtue of having transformed a security interest into an investment. Thus, the question of the extent of participation allowed under the exemption arises only in the context of creditors who do not take title to the property or who dispose of the property shortly after taking title.

Even when the lending institution does not foreclose on a piece of property or disposes of it quickly, it can still be involved in the management of the property,
particularly if that involvement is designed to improve the financial health of the debtor. The rule would also apply if the creditor influenced or participated in actual decisions regarding operations of the site. There need not be any actual participation in the operation of the site in order to trigger lender liability. Evidence from US court rulings suggest that mere capacity to influence operational decisions was sufficient to enforce liability, even if the creditor had not actually not exercised that influence. This clearly extends the scope for lender liability. It converts the secured creditor exemption from a source of protection for lending institutions to a source of increased liability. This is because of the fact the activity that trigger liability for creditors would now be broader than those applicable to operators.

A creditor can avoid liability by invoking the ‘innocent landowner’ defence. Although this defence seems geared primarily towards direct buyers, lenders who become landowners through foreclosure could also invoke it. This exemption relieves a defendant of liability if he acquired the property after the disposal of the waste or had no knowledge of the existence of contamination at the site at the time of purchase. He might avail of the exemption, if he had exercised due care with regard to the hazardous substances and took precautions against the foreseeable acts or omissions of any third party. A key issue in invoking the innocent-landowner defence is establishing that the landowner had no reason to know about the contamination at the time of purchase. To establish this, the landowner must undertake “all appropriate inquiry into the previous ownership and uses of the property”. The “… all appropriate inquiry” would imply that an environmental assessment be conducted by the owner before purchasing the property. There might, however, be still some more requirements that need to be addressed to invoke this clause. Thus conditions under which the innocent-landowner defence could be invoked by a landowner to avoid liability have yet to be clearly established.

Concerns about the extent of lender liability, and the inadequate protection provided by the secured-creditor and innocent-landowner exemptions, one needs to define more explicitly what actions can and cannot be taken by creditors before liability can be invoked. In additions there needs to be proper rules to define the scope for lender liability through regulatory means. Attempts to limit lender liability are
presumably based on a belief that the costs imposed by holding lenders liable for cleanup outweigh any benefits that such a policy might have.

The Effects:

In evaluating the potential for lender liability, a number of claims regarding its impact have been made. Some highlight its beneficial while others emphasise its negative implications.

The main benefit from including lenders in the pool of potential responsible parties is the incentive that such a policy creates for lenders to do what is within their power to reduce the risks of hazardous waste contamination. As Dinan and Johnson says that, lender liability creates an incentive for lenders to perform a “gate-keeping” role whereby the lender could induce appropriate hazardous-waste management by tying its financial support to act as private regulators. In addition, Dinan and Johnson argue that lenders may be better gatekeepers than direct buyers of property because of their “deep pockets”. Private gate-keeping incentives will only be efficient if the gatekeeper has sufficient assets at risk to want to perform the gate-keeping role. If the buyer of a piece of property has limited assets, then his stake in inducing appropriate waste management will be limited. The stakes may be much higher for a lending institution, however, thereby creating a greater incentive for performing the gatekeeping role. The gate-keeping function involves conducting environmental audits or assessments to detect any environmental problems. Such investigations are useful since they can help detect any contamination that can be contained or corrected early to prevent any future damages. These, thus reduce future damages as well. The lender will have a greater need for audits and assessments if they are a prerequisite to invoking the innocent-landowner defence. Finally, if the contamination related costs are to be effectively capitalised into the purchase price of the land or the interest rate on a loan, then the extent of contamination needs to be known by all involved parties. Environmental assessments will be performed more frequently as a result of lender liability.

In addition to the gate-keeping function of lender liability, it also ensures a larger pool of money from which cleanup can be financed, thereby reducing the amount of federal money that must be committed. While this may be an advantage from the perspective of the government authority if its objective is to maximise the
amount of cleanup that can be conducted with limited pool of money, it is not clear that it is a social advantage of holding lenders liable.

In focusing on the role of monitoring costs in choosing between prior regulation and *ex post* liability for attacking problems, Wittman, puts forth some interesting ideas for choosing liability as a policy instrument. It also emphasises the close relation between a system of *ex post* liability and deposit-refund system.

While the proponents of lender liability have emphasised the positive incentive effects it creates, the critics have been very vocal regarding its detrimental effects. Toulme and Cloud have argued that that lender liability actually reduces the incentives for gate-keeping. If a lender's liability will be triggered by either its capacity to influence or its actual influence over decisions regarding hazardous-waste management, then the lender will have an incentive to distance itself from those decisions to avoid liability. Thus, the ability to escape liability through lack of actual or potential involvement with waste management decisions provides an incentive for a 'hands-off' policy by lenders. This suggests, however, that the problem is not lender liability *per se*, but rather the exemption that have been granted to that liability and the lender's ability to influence whether or not it would qualify for an exemption.

There are also claims that the gate-keeping or monitoring function of lenders is socially costly and that it would be more efficient for debtors to monitor their own behaviour. If all liability were to remain with the debtor, then presumably the debtor would face appropriate incentives to monitor his own behaviour and would not need the outside (and costly) oversight of the lending institution. This argument ignores, however, the limitations on efficient monitoring incentives created by limited assets. If the debtor has limited assets, it may be able to avoid full liability. This possibility reduces the debtor's incentives to monitor its own behaviour. Limited liability is likely to be less of an issue for lending institutions.

Lender liability faces a major criticism of raising the cost of credit and decreases the availability of funds that could be used for land purchases and/or environmental cleanup or response. As lenders seek to recoup the costs of environmental assessments and future liability imposed by governments, the supply curve for credit will shift up. This will raise the equilibrium cost of capital of credit, through increase in either loan-related charges or the interest rate, and decrease the
equilibrium quantity. As a result, fewer land transfers will take place and expenditure on pollution control and other costs will be reduced. This, Toulme and Cloud, allege is a serious problem for small businesses.

In spite of many claims for and against lender liability, there has been very little formal analysis of its implications. Dinan & Johnson (1990) have compared the effects of two types of liability in an analytical framework, but they do not consider the efficiency effects of lender liability per se. This can be done effectively by taking account of resource allocation with and without lender liability.

**Lender Liability & Efficiency:**

Focus here is on two alleged impacts of lender liability namely, its beneficial impact on the incentive to conduct environmental assessments at the time of purchase and its detrimental impact on the cost and availability of funds to finance projects.

When a project has to be debt-financed, then not only should its cost be such that it is feasible to undertake the project, but in addition there must be an interest rate at which the owner would want to borrow and the lender would want to lend. Clearly, the interest rate at which the lender is willing to lend will reflect its expected cost, including any liability it might incur in the event of default. Thus, the equilibrium rate of interest will depend on the lender's share of liability under default, the probability of default, and the value of the collateral under default. In other words, the lender will be able to shift some of his liability costs onto the buyer in the form of increased rate of interest.

The net effect of the shifting of costs from the lender to the buyer is the creation of a "owner/lender" entity that plays the role under debt-financing that the buyer alone under equity financing. The key parameters in determining the efficiency of the lend/borrow decision are the probability that the 'judgement-proof' and the expected liability share of the two combined. Of course if the lender is truly a 'deep pocket', then the probability that the owner/lender combination is nearly zero, since, even if the owner cannot pay the liability costs, the lender can. Likewise if the lender simply assumes at the time of default any of the owner's liability, then the expected liability share of the two combined is simply the owner's liability share.

Segerson says that the lender allows us to determine when, if ever, it might be effective to transfer liability to the buyer (the owner here) but absolve the lender of
liability in the event of default. With cost shifting through interest rate, such a policy merely reduces the expected liability share of the owner/lender combination. It does not eliminate the inefficiency due to the different values that the victim and the owner/lender would place on the expected liability because of different values of being 'judgement-proof'. Thus there is no justification in terms of efficiency for transferring liability to owners and not subsequently to their lenders.

Although the attainment of efficiency may not be guaranteed through either allowing or disallowing a lender liability exemption, the extent to which lenders are held liable for the damage can still affect the efficiency of the lend/borrow decision. In general the effect of lender liability ceteris paribus, is to reduce the value of the project to the owner/lender combination. Whether this increases or decreases efficiency depends on whether there are already too many or too few projects being executed. Without empirical estimates of the important parameters, it is not possible to possible to determine if the imposition of lender liability would enhance or reduce the efficiency of project execution. On the other hand if the victims cannot influence their probability by charging for the damage caused or alternatively, if the probability of execution falls if they charge compensation, then operations will reach a minimum. In such a case the imposition or an increase in the lender liability will reduce efficiency further.

It has been promised that liability law is an important and promising tool for dealing with pollution problems. Economic theory, however, is ambivalent about its effects. Firms with relatively limited assets may be sheltered from the economic incentives created by strict liability, but it has also been found that when firm assets are limited the effects of imposing strict liability are at best, uncertain. They dispel the notion that under strict liability the level of care taken by a firm to prevent accidental releases is always increasing in firm wealth and it is concluded that large, wealthy firms may or may not be safer than smaller firms.

Firms may even select their asset level or corporate financial structure to minimise payment of damages in the event of an accident (Pitchford, Ringleb and Wiggins) provide evidence that imposition of strict liability may have in fact encouraged wealthier firms to spin off into, or subcontract risky operations to, smaller, judgement-proof companies in hopes of avoiding liability. Finally, the
incentives created by liability can be altered by the availability and cost of pollution insurance. We turn to look at a model of lender liability for pollution control in the next chapter.