LENDER LIABILITY: APPORTIONING THE COST OF ENVIRONMENTAL REMEDIATION

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As the full extent of damage resulting from past environmental practices has been realised, governments around the world have attempted to allocate the cost of clean-up to those responsible for pollution generating activities. As a result of seeking to make polluters pay, lender liability laws have been enacted providing for creditors to pay the cost of remedial measures for the environmental damage caused by borrowers. In this paper, the desirability and effectiveness of lender liability laws as a mechanism to fund the clean-up of past environmental damage and prevent future environmental damage, are examined within an institutional framework. In the presence of high transaction costs, liability laws are unlikely to be effective in achieving the desired outcomes given the attenuated structure of entitlements they generate.

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Recognition of the costly implications of past pollution generating and disposal activities, and a desire to avoid such outcomes in the future, has precipitated action by legislators in Australia and overseas. The legislative response to the cost of cleaning up existing pollution and influencing future practices involves a number of features. Among these responses are attempts to clarify the 'ownership' of natural resources, and the development of appropriate institutional structures to induce efficient use of those resources. One such response is that encapsulated in the notion of lender liability laws.

The objective of this paper is to analyse lender liability laws in an institutional framework, and comment on their use as a tool to apportion the cost of environmental remediation activities. The approach taken in the paper is as follows. Initially, the nature and content of lender liability laws is set out so as to provide a background to the problem being considered. Secondly, the notion of an institutional structure is described to provide a framework within which to analyse lender liability laws. The development and operation of lender liability laws is then analysed by considering their retrospective and prospective operation. It is concluded that given high transactions costs, lender liability laws are unlikely to be effective as a mechanism to ameliorate past and prospective pollution generation and disposal activities.

1. Lender Liability Laws

Having first developed in the United States, laws which advertently or inadvertently impose potential liability on creditors for environmental degradation are now a world wide phenomena with examples in Australia, Canada and the European Community (Lee 1993). Despite limited application to this point, the sweeping scope of lender liability laws has seen increasing concern expressed at their potential impact amid calls for their amendment and or repeal (Anon. 1994).[1] A brief overview of the development of the laws in the United States is set out before examining the situation in New South Wales.

(i) The United States Experience

In recognition of the extensive damages which past waste generation and disposal activities had imposed in the United States, Congress in 1979 enacted the

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[1] Concern has not been confined to banks. The Confederation of British Industry recently stated that ' ... (W)hilst it might, in principle, seem attractive to encourage lenders to share more in environmental risks, such a move is likely, in practice, to do no more than to discourage lending to a business because of its sector, geography or size ... ' (quoted in Anon, 1994).

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA; the Act) specifying which parties were responsible for cleaning up sites contaminated with hazardous wastes. Given the muted responses of commercial lenders to the enactment of the Act, the full implications of its provisions for lenders was apparently not appreciated. It took the application and development of the provisions of the Act through a number of controversial cases before its potentially draconian implications for lenders were recognised. The CERCLA legislation has been described as a reflection of the 'deep-pockets theory' of environmental liability, which literally sought to find 'deep pockets' with which to fund environmental remediation activities. Under this notion, legislation is drafted so as to impose liability for clean up on the firm which owns or controls a contaminated site when pollution is discovered (Mfodwo 1991a, pp. 108-09).

The Act provided for the United States Environmental Protection Agency (US EPA) to recover clean-up costs for contaminated sites from parties deemed responsible for the contamination where they could be identified. Under the Act, parties potentially responsible for clean up costs consisted of three groups: generators of the waste; transporters of the waste; and current and past owners or operators of the relevant facility (Olexa 1991). Liability under the Act for remediation of contaminated sites is retrospective, strict and joint. Retrospective liability under the CERCLA legislation implies that a potentially responsible party may be found liable for clean up costs for waste disposed even before the Act came into effect. Strict liability has the effect that liability does not depend on fault, nor does it depend on the party having played an active part in the generation and or disposal of the waste. Finally, joint liability has the implication that each potentially responsible party may be treated as though it alone was responsible, and therefore each individually suffer the full extent of any liability (Olexa 1991, p. 1389). Although a number of defences are available to potentially responsible parties, these characteristics of liability under the Act make findings of liability potentially very expensive.

The source of lender or creditor liability for the clean up costs of environmental damage caused by debtors arose because of judicial interpretation of creditor actions ostensibly designed to protect interests in loans (James 1988). In particular, where the creditor was found either to take possession of a contaminated site or adopted some responsibility for management of a relevant facility, it potentially fell into the owner-operator class of responsible parties under the Act. With liability retrospective in nature, a creditor found itself in the unenviable position of being potentially liable for cleanup costs arising from the actions of past owner-operators, including contamination that occurred before the CERCLA was enacted. Despite the insertion of clarifications and

exemptions into the Act for parties protecting their 'security interest'; subsequent judicial interpretation has suggested that even limited interference in the operations of an organisation may provide sufficient grounds to establish liability. For example, in the *Fleet Factors*[2] case, the Court held that participation in the financial management of an organisation to a degree indicating a *capacity to influence* the corporation's treatment of hazardous waste may be enough to give rise to liability (Olexa, 1991). Although subsequently overruled by a higher Court, the decision gives some indication of the potentially far reaching effects of the legislation (see also Mfodwo 1991a, pp. 108-11).

The extensive scope of such an interpretation of CERCLA provisions can be appreciated when one considers the range of actions which may precipitate a finding of liability for creditors. Actions which have been suggested as constituting 'control' and therefore generating potential liability include the appointment of members to the Board of Directors by a creditor, 'closely monitoring borrower operations during the course of a loan', or operating the entity through an appointed third party (Mfodwo 1991a, p. 111).

The potential problems created by decisions like that in the *Fleet Factors* case precipitated a reassessment of the CERCLA legislation. In 1992 the US EPA issued a set of guidelines clarifying some of the issues thrown up by the inconsistent and far-reaching court decisions. In the guidelines, the US EPA disassociated itself from the interpretation of 'ownership and control' adopted by the court in the *Fleet Factors* case; described a set of activities available to a creditor which would not precipitate 'control' sufficient to generate potential liability; and described a series of transactions and relationships which fall within the defences afforded under the Act. Actions which do not amount to ownership and control, and are therefore outside the ambit of the legislation include undertaking environmental audits, environmental policing or monitoring actions undertaken during the course of the loan, and foreclosure and post-foreclosure activities associated with protecting the creditor's security interest (Clark 1993).

In addition, the US EPA clarified the operation of defences which would preclude liability from being imposed on lenders. These defences relate to acts undertaken by creditors to protect their security interest in a loan, as opposed to an assertion of ownership or control. Despite these pronouncements, which remain subject to challenge, the scope for lender liability under CERCLA remains substantial.

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[2]901 F. 2d 1550 (11th Cir. 1990), cited in Olexa (1991).

(ii) The Australian Experience

Similar provisions to those set out in CERCLA have been enacted in a range of jurisdictions including the United Kingdom, Canada and Australia (Lee 1993). In Australia, legislative responses in New South Wales and Victoria have mirrored those in the United States and Canada respectively (Mfodwo 1991a, 1991b; Bates 1992, pp. 324-28). In New South Wales, the two most important pieces of legislation in the context of lender liability are the *Environmental Offences and Penalties Act* 1989 (EOPA), and the *Environmentally Hazardous Chemicals Act* 1985 (EHCA). Lender liability in New South Wales under the EOPA potentially arises because of the manner in which the offences have been defined. The relevant offences under the EOPA are; wilful or negligent disposal of waste without lawful authority (s. 5), and wilfully or negligently causing or contributing to leaks, spills or escapes from containers without lawful authority (s. 6). If found guilty of an offence under the EOPA, a 'person' is liable to a penalty (s. 8), in addition to an order requiring that the person abate and or mitigate harm caused to the environment arising from the commission of the offence (s. 14).[3] Under the EHCA, the New South Wales Environment Protection Authority (NSW EPA) may serve a notice under s. 35 of the EHCA on the occupier of contaminated land to remediate that land.

Liability for environmental remediation has not been imposed on lenders in New South Wales as it has in the United States, and there is significant uncertainty about how the legislation may operate. Nevertheless, scope exists under both the EOPA and EHCA for creditors to be held liable for the cost of environmental remediation. Under the EOPA lender liability is most likely to arise if illegal pollution generation and disposal activities occur at the same time the creditor engages in activities amounting to 'control' of the borrower. This may happen, for example, when the creditor forecloses on a property or is in the process of doing so. Similarly, liability may arise if pollution occurs at the same time the creditor is found to be participating in the day to day operations of a company, such as in a bid to avert insolvency (Mfodwo 1991; McDonald 1991). Under the EHCA, a creditor may find itself liable for the cost of clean up where it is an owner or occupier of the contaminated property, and therefore be subject to an order requiring remediation. The creditor may find itself in this position if they have obtained title to the land, have exercised a right to take possession, or appointed a receiver or manager in bankruptcy (Australian and New Zealand Environment and Conservation Council 1993, p. 25).

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[3] Note that the provisions described do not exhaust the offences, or the implications of an offence under the EOPA.

The defences available under s. 7 of the EOPA, and to orders under s. 35 of the EHCA, are also of interest. Offences under the EOPA require the offender to have acted negligently or wilfully, with the former standard being more likely to result in lender liability. The first arm of the defence under s. 7 precludes liability where the person can show that the commission of the offence was due to causes over which the person had no control (s. 7(a)). This would seem to preclude far reaching retrospective liability as applied under CERCLA, and confine liability to pollution which occurred after the creditor had acquired some interest in the property. However, statements by the NSW EPA that it is not policy to hold creditors liable for 'inherited contamination' imply that this possibility cannot be ruled out (Anon 1993). The second arm of the defence excuses persons where they can show they took reasonable precautions and exercised due diligence to prevent commission of the offence. This provision suggests that monitoring of borrowers may be desirable on the part of creditors and preclude a finding of liability. Similarly, creditors may be precluded from a finding of liability under s. 35 of the EHCA if they can show they did not perform the activities which caused the contamination, and, did not have knowledge or reason to suspect contamination of the land (Australian and New Zealand Environment and Conservation Council 1993, p. 51).

Despite the fact that the Australian experience is not one in which lenders have been found liable for remediation of contaminated sites, there would appear to be a wide ranging recognition that liability potentially exists. Moreover, there is evidence that Australian creditors not only perceive the risk from environmental liability suits to be real, but to have also responded through their loan activities. A survey of Australian banks in 1992 showed that these responses include altering lending procedures, educating staff in the problems which they may face as a result of environmental requirements, and adopting procedures to protect the interests of creditors from penalties arising from environmental considerations (Schwaiger 1993). It is important to recognise in the Australian context, that despite lender liability laws not having been applied to this point, the threat of future liability has induced a real response on the part of creditors. The threat to Australian lenders is similar to the problems faced under CERCLA by American creditors, and similar responses and considerations will influence the efficiency and effectiveness of lender liability laws in Australia.

2. An Analytical Framework

It has been recognised that the legal framework of an economy and the broader institutional structure associated with it, has particular significance for the use of natural resources. In this section, it is proposed to describe the theoretical framework in which lender liability laws will be analysed. This will involve describing the notion of an institutional structure, and the implications of the choice of structures for the outcomes generated.

Bromley (1989) describes institutions as the rules and conventions that define choice sets from which economic agents choose courses of action (p. 39). Laws are part of this set of 'rules and conventions' that describe and define the relationships between economic agents, and therefore determine the nature of economic interaction and outcomes. At any point in time, the prevailing institutional structure (or arrangement) specifies ownership over income streams and imposes cost burdens on particular agents. Bromley (1989) points out that a given institutional arrangement will generate *entitlements* for economic agents in outcomes in which they have an interest (p. 150). These entitlements determine the claims (stakes) of parties in economic outcomes in which parties have an interest. The nature and distribution of entitlements an institutional arrangement imposes, has important implications for the nature of transactions carried out, and therefore resource allocation.

It is important to recognise that institutional arrangements are not static. For this purpose, two domains of economic interaction can be distinguished, namely commodity transactions and institutional transactions. Commodity transactions refer to the buying and selling of goods and services. These are the transactions which a large proportion of economic analysis is concerned. Institutional transactions on the other hand, are transactions over the set of rules within which commodity transactions are performed (Bromley 1989, p. 49). This latter set of transactions are designed to 'rewrite' the institutional structure, and therefore rearrange the entitlements of parties.

The prevailing institutional structure has important implications for natural resource use. From the perspective of natural resources for instance, there is a large body of literature dealing with the issue of specifying 'property rights' in natural resources. Similarly, Calabresi and Melamed (1972) consider individual (or group) 'entitlements' protected by different types of *rules*. These rules are property rules, liability rules and

inalienability rules.[4] Each rule imposes different rights, duties and obligations on parties to a transaction, or makes available alternatives avenues of recourse to parties under different outcomes. The institutional literature stresses that the desirability of one approach over another will depend on a range of considerations including party specific knowledge about the riskiness of certain actions, transactions costs and the ability of a polluting party may prove to be incapable of paying for the full harm caused by his/her actions (Shavell 1984, pp. 358-65). These considerations are likely to be particularly important in the context of natural resource use and externality analysis. Polinsky (1979) for example, examines in detail alternative outcomes under property rules and liability rules in the presence of externalities, and shows that neither approach strictly dominates the other. The most 'efficient' approach and the actual outcome being a function of the parties strategic behaviour, the limited information characterising the relationships between the parties and; the nature of the global-local optimums attainable (pp. 22-30, 45-48).

It is important to put the discussion above in context. Legal relations established under the EOPA and EHCA represent an important change in the institutional arrangements which govern the nature of relationships between parties when the environment is actually or potentially affected. These Acts have altered the interests, claims and entitlements of parties in a range of transactions including those involving creditors. In altering the institutional structure in this way, the choice sets available to lenders, amongst others, are altered and the use of resources will be influenced.

3. An Analysis of Lender Liability Laws

Examination of lender liability laws in the past has concentrated on the effects such laws have on transfers in property. The analysis presented below attempts to review the these laws from a more fundamental perspective by examining the institutional implications of lender liability laws. The analysis proceeds in two parts; in the first part some of the considerations which have been advanced as relevant to the retrospective and prospective operation of lender liability laws are examined. Next, lender liability laws are analysed from an institutional perspective and conclusions drawn about their economic desirability.

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[4] See Calabresi and Melamed (1972) for a full discussion of the operation of each type of rule.

(i) Lender Liability Laws in the Literature

(a) The Retrospective Operation of Lender Liability Laws

Retrospective application of lender liability laws refers to their application to pre-existing pollution at the time of their enactment (Segerson 1989). As noted above, the NSW EPA has evinced an intention not to pursue lenders for cleanup costs of inherited contaminated sites, so that the retrospective effect of lender liability laws may not be as pertinent for Australian creditors as it is for those in the United States. Nevertheless, the retrospective operation of lender liability laws presents some interesting economic implications worth considering.

In relation to polluted sites existing at the time of enactment, from a legal perspective lender liability laws were primarily seen as an attempt to provide a source of funds, or 'deep pocket', for environment remediation purposes. From an economic perspective, this may be seen as an attempt to capture some of the profits which have accrued to firms because of past environmental practices. Firms which have profited from their waste generation and disposal activities in the past vis-a-vis access to the environment to dispose cheaply of wastes, may be penalised in future financial transactions as lenders adjust their net worth to take into account the cost of remediating environmental damage. In this way, the retrospective operation of lender liability laws may be seen partly as an attempt to internalise externalities ex post by capturing some of the profits from waste generation and disposal activities which contribute to the current value of the firm. In light of these considerations, the intention of the NSW EPA not to recover clean up costs from lenders for inherited contamination may be inappropriate. Whether this is the case depends on a number of considerations, not least the transactions costs associated with recovering these past profits. This is a matter which is considered in more detail below. The important point in this context is that, subject to transactions costs consideration, retrospective application of lender liability laws may be justified from an economics perspective.

In addition to those considerations set out above, the welfare effects of the retrospective operation of lender liability laws will be directly related to the attitudes to risk sharing by the affected parties, any incentive effects created, and the presence or absence of insurance markets. If creditors are risk neutral, then lender liability laws may represent an optimal allocation of risk sharing between themselves, polluters and the state in relation to environmental remediation. Even if not risk neutral, the availability of insurance may allow risk to be shared optimally through appropriate transactions. However, the crisis in markets for insurance in environmental clean up costs and

difficulties associated with insuring against the types of risks which may be created under lender liability laws would suggest that large scale insuring of losses is unlikely (Knapman 1991). Given the potentially large scale of cost associated with remediation, the allocation of risk associated with lender liability laws is unlikely to be optimal. In relation to past activities, a cleanup fund which spreads the cost of cleanup over a larger portion of the population may be more desirable by recognising the risk neutrality of persons when risk can be spread sufficiently thinly (Segerson 1989).

Other effects likely to flow from retroactive application of lender liability laws include the use of environmental audits, a phenomenon witnessed in both the United States and Australia (Schwaiger 1993). An environmental audit may indicate the presence of contamination and thereby assist in the avoidance of future contamination, or reduce overall cleanup costs through early detection of contaminated sites (Segerson 1992; 1993). In a relatively simple model of seller and buyer-financier relationships, however, Segerson (1993) shows the incentive structure for carrying out environmental audits established by lender liability laws is unlikely to be efficient (pp. 53-55). The buyer choosing to do too many or too few audits depending on the assignment of liability; the probability that a buyer-financier is actually held liable for its share of remediation costs if the land is purchased; the value placed on the liability by buyers-financiers and sellers; and the probability that the seller pays its share of any liability if the land is actually sold. For example, the lower the proportion of liability placed on the buyer-financier, and the greater the probability they will be judgment proof (escaping liability), the less likely a buyer-financier will conduct an economically efficient audit.

Intuitively, similar considerations to those influencing the decision to conduct an environmental audit will influence the decision to buy and sell. Segerson (1993, p. 61) points out that:

> ... in general, if the probabilities of the seller being judgment-proof differ from each other and from 1 [under sale and no sale], the buy/sell decision will not be efficient. Moreover, the number of sales can be more or less than the efficient number, depending on the assignment of liability and [the probability that the lender actually pays his/her share of the liability] ... [5]

It is unlikely that the general conditions Segerson (1993) requires for efficiency will be met. In her model, the probability of being made judgment proof are 'characteristics of

[5] The probabilities Segerson is referring to are the probability the seller will actually end up paying its share of liability if the property is sold, and the corresponding probability if the land is not sold (p. 51). If these probabilities equal one, the seller will pay its share of liability irrespective of sale if found liable.

the buyer-financier and seller over which a policy maker has no control' (p. 51). Observation of responses to the CERCLA and New South Wales legislation, however, suggest that both buyer and seller-creditors are likely to actively adjust both their behaviour and structure to increase the probability of being judgment proof, thereby escaping liability. A seller may influence the probability of being judgment proof through sale of a property by expending the proceeds from the sale and reducing assets, or, becoming inaccessible or unidentifiable. Similarly, the ability of creditors to undertake institutional transactions, is likely to result in the probabilities of being judgment proof differing from one.

The redistributive consequences of lender liability laws also warrant consideration. In the United States, a figure of $US100 billion has been suggested as the cost of remediating contaminated sites (Menell 1991, p. 108). In New South Wales, the analogous figure has been set at $2 billion (Australian and New Zealand Environment and Conservation Council 1993, p. 38). Note, it is not suggested that creditors alone will be required to fund remediation expenses to this extent as the range of potentially responsible parties under CERCLA, and the New South Wales legislation, is large. Notwithstanding this, however, it would seem reasonable to suggest that excessive retrospective burdens have the potential to impact adversely on the financial viability of a creditor because of the acts of predecessors in title. As they are substantial, the redistributive implications of lender liability laws are a legitimate cause of concern.

(b) The Prospective Operation of Lender Liability Laws

Lender liability laws act prospectively in that they influence pollution generating and disposal actions in the future, that is, after the relevant laws have been enacted. In particular, such laws may enhance the efficiency of decisions in the future as a result of the incentive they offers for lenders to adopt a 'gatekeeper' role. A gatekeeper relationship between creditor and borrower is effectively one of principal and agent respectively. The gatekeeper-principal has a vested interest in the actions of the other party (the agent), and adopts policies to ensure that its interests are not adversely affected by the actions of the agent. Lender liability laws should induce creditors to adopt strategies which protect their own interests, and consequently the environment from illegal waste generation and disposal activities (Dinan and Johnson 1990, pp. 524-27). Significantly, there does in fact appear to be some anecdotal evidence that U.S. credit institutions are adopting a gatekeeper role through appropriate pro-active measures (Olexa 1989, pp. 1392-93).

Perhaps most importantly, interpretations of and directions in relation to lender liability laws have given explicit recognition to the principal-agent relationship. Monitoring by creditors of waste generation and disposal activities by debtors do not fall within the range of actions which would support a finding of liability. That is, they do not represent control or operation activities. The existence of such a relationship should, however, be tempered by an understanding of the incentives facing creditors, the principals in this relationship. The scope to undertake institutional transactions which undermine the relationship is substantial, and thereby reduce the incentives created by the institutional structure. For this reason, the principal-agent relationship will be weakened and the performance of a gatekeeper role by creditors undermined.

(ii) An Institutional Perspective

The New South Wales laws established under the EOPA and EHCA represent an important change to the institutional framework in relation to the environment. Interests, claims and entitlements for creditors, amongst others, have been altered as a result of the legal framework set out by the relevant provisions under both Acts. These provisions have effectively specified a variety of property and liability rules which are likely to have significant implications for the allocation of resources in financial transactions, and ultimately the environment. Most importantly, the figures cited previously for the cleanup cost of pre-existing environmental hazards, both in the United States and Australia, imply that the changes in entitlements associated with lender liability laws are not trivial. In light of these considerations, the nature of the changes bought about by lender liability laws are examined below in an institutional framework. What the analysis does point to, is some fundamental flaws in entitlements established under lender liability laws which amount to attenuation of the entitlement structure as presently specified.

The most striking feature of lender liability laws is the uncertainty associated with them. In the case of the EOPA and EHCA, the entitlement structure facing lenders is not well defined. A large amount of legal and academic conjecturing has been undertaken to determine the circumstances under which lenders may or may not be liable. To use an analogy from the property rights literature, the entitlement structure associated with lender liability laws does not appears to be well specified, and is therefore attenuated. When enacted by legislators or pronounced by courts, laws or legal rulings are by their very nature uncertain and subject to challenge as to their proper operation. It is the role of various tribunals and ultimately higher courts, to resolve any uncertainty and pronounce on the correct boundaries and operation of laws. This is a dynamic process

in which parties with interests in outcomes constantly challenge the ambit and meaning of laws. The process is in effect, a manifestation of parties engaging in the institutional transactions described previously to define entitlements in accordance with their own interests.

The costs associated with engaging in these institutional transactions, specifying the institutional structure and removing sources of uncertainty are not trivial, and in the case of lender liability laws, would appear to be substantial on the basis of U.S. experience.[6] Moreover, by leaving the institutional structure poorly specified another source of costs may be incurred as incentives are created for creditors to transact around potential liability. Mechanisms and policies are developed by creditors to ensure that they avoid falling within one of the designated groups liable for remediation costs. Indeed, this appears to be a common response in both the U.S. and Australia with a number of writers suggesting strategies which can be adopted to avoid liability from potentially arising. The responses documented to date have varied but include structuring loan agreements to exclude sources of potential liability from falling within the ambit of the loan; requiring borrowers to warrant their understanding of relevant environmental obligations; maintaining an arms length relationship with debtors to avoid being cast as an operator of a contaminated facility; and assessing the risks posed by certain industries with a view to minimising exposure to high risk debtors (Mazzocco 1989; Mfwodo 1991a). Where these strategies would not otherwise be adopted by creditors under a different institutional structure, an additional cost is imposed on financial transactions in which environmental considerations are pertinent. In the context of the previous discussion, an incentive is created and costs incurred to undermine the principal-agent relationship established under lender liability laws.

Analysis of the costs and operation of lender liability laws is made more difficult by their inadvertent and ad hoc development. It has already been noted that the NSW EPA has evinced an intention not to impose liability retrospectively. In terms of the prospective operation of lender liability laws, the costs of enforcement are likely to be extremely high (see footnote 6). More generally, the lack of enforcement to date and the recognised difficulty of enforceability points to another source of attenuation of the institutional structure established by lender liability laws.

It was noted previously that the enactment of lender liability laws exposes certain designated parties to potentially quite massive remediation bills in the future. In the absence of an effective insurance market in environmental remediation costs, the

[6] Menell (1991) cites a figure of $44 billion in potential litigation associated costs to allocate responsibility for remediating $100 billion of waste disposal practices in the United States.

entitlements associated with the prevailing institutional structure cannot be traded, and the risk associated with it is shared efficiently. Again, the entitlement structure is attenuated in that trade in entitlements cannot be reallocated amongst agents in an efficient manner. In the absence of insurance markets creditors are likely to reduce the risk associated with lender liability laws through other mechanisms. In the United States, reducing exposure to liability by limiting the funds available to certain industries, and increasing the cost of credit overall, have been cited as outcomes of the CERCLA legislation (Segerson 1992, pp. 200-01).

The discussion set out above identifies significant problems associated with lender liability laws. Most importantly, lender liability laws in their present form imply an attenuated set of entitlements. The institutional structure which is the outcome of lender liability laws in their present form, is likely to be characterised by costly institutional transactions designed to clarify that structure in accordance with the interests of affected parties. Bromley (1989) points out the fundamental difficulty of assessing the 'efficiency' of one institutional structure against any other. An efficient allocation of resources under any one institutional structure may appear to be inefficient under another. What can be stated, however, is that any one institutional structure will give rise to a series of transactions (commodity and institutional), and result in a particular allocation of resources. Considering lender liability laws as they are presently specified, substantial resources are likely to be expended in attempting to enforce and specify more precisely the entitlements in the given institutional arrangement. The attenuated nature of that entitlement structure is likely to give rise to costly transactions specifically designed to avoid liability. In light of the high cost of these transactions, and the use of resources they imply, alternative institutional structures should be examined to determine if they can better address the problems of cleaning up past waste practices, and influencing future practices in a desirable manner.

Conclusions

The importance of institutional structure for environmental resource allocation and use has been developed in this paper. The development of lender liability laws, it is argued, represents a significant change in the institutional structure of the economy. Despite a number of economic justifications for lender liability laws, the major conclusion which can be drawn from this current paper is the likely ineffectiveness of lender liability laws to induce more desirable waste generation and disposal behaviour on the part of polluters, and the likelihood that high costs will be associated with their clarification

and enforcement. This outcome arises because of the weakness of the incentive structure associated with the principal-agent relationship created by lender liability laws, and high costs associated with institutional transactions given the attenuated nature of entitlements associated with apportioning remediation costs in this manner.

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