

Financial Innovations and Corporate Insolvency

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Abstract

In this paper we develop a corporate-finance oriented theory of financial innovations. The theory is motivated by the different corporate insolvency procedures in England and America. In the paper's empirical section we show that these procedures have emerged from different *innovation regimes*. English law was innovated by lenders and borrowers exercising their right to contract freely, while American law was innovated by judges and legislators whose intervention often violated pre-contractual agreements. In the paper's theoretical section we develop a formal model that analyzes the potential advantages and disadvantages of the two innovation regimes. The freedom of contracting regime preserves the *ex ante* outlook of the parties. Its disadvantage is that the innovating parties fail to internalize all the benefits of the innovation to other parties, and as a result under innovation occurs. Legislative intervention attempts to solve this externality, but once in control of the innovation process, judges and legislators may place their political objectives above those of the parties. Our analysis is much affected by the notion that corporate law is a set of contractual *standards*.

Key words: standard contracts, financial innovations,
freedom of contract, floating charge, Chapter 11.

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1. Introduction

It is well known that England and the US have very different legal procedures to deal with insolvent corporations. Upon default, the English procedure tightly concentrates control rights in the hands of senior lenders; America has a 'loose' procedure with more dispersed control rights. In this paper we use the comparative histories of the two systems in order to make some general statements about the historical nature of financial institutions, and about the role of the State in institutional evolution. The paper contains a brief history of corporate insolvency procedure in both England and America, and a formal model that analyzes the evolution of the procedure under various *regimes* of state intervention. The theoretical analysis is driven by the idea that corporate law is, essentially, a *standard* for corporate contracting.

Our historical analysis reveals that the English procedure was developed by lenders and borrowers, exercising their right to contract freely. Thus, it was left to the parties to design their own insolvency procedure, and to make part of the debt contract. Eventually, those procedures were standardized into law. The role of the State in this process was relatively limited, largely confined to enforcing the contract as intended by the parties. In contrast, the US Constitution gave Congress the power to legislate a new bankruptcy law. Towards the end of the nineteenth century, some railroad defaults provoked the courts' intervention. Given the railroads' great importance in contemporary America, it was felt that the lenders' liquidation rights stood in conflict with the public interest. We show how the Federal Courts innovated new procedures to preserve the railroad, sometimes in blunt violation of pre-contracted agreements, and how this bias towards going concerns has stayed with the American bankruptcy system to the present day.

This explanation raises two fundamental questions. The first is why financial institutions are so 'path dependent'? The second is why should the State intervene on matters that can, in principle, be resolved by way of a contract between the parties? Essentially, why do we need corporate law to begin with?

We argue that the answer to both questions lies in the need to *standardize* commercial contracts. Our theory is based on the idea that standard contracts are cheaper to communicate and to enforce relative to newly innovated contracts, which give rise to ambiguities that need to be resolved in court at high cost. The crucial point is that it is cheaper to transact and contract under the standard, compared with an innovation, just because the standard has been used and enforced previously. It follows that standard contracts are prone to a network externality. It is well known that network externalities may create path-dependency and invoke State intervention.¹

This insight provides the basis for the welfare evaluation of the two regimes. Consider, first, the *freedom of contracting* regime used in England. In such an environment, the parties ignore the effect of their innovation on future contracting parties. That has two implications. On the one hand, because the innovating parties fail to internalise the value they create for subsequent contracting parties, they innovate less than is socially desirable (*i.e. under-innovation*). On the other hand, the innovating parties internalise the risk the innovation will not be enforced by the courts, although this risk will vanish once the innovation is standardised. We argue that, as a result, the innovating parties react to the underlying incentive problem by more than is socially desirable (*i.e. over-reaction*). Hence, England's current insolvency procedure is a result of over-tightening its initial conditions.

America's legislative intervention may be rationalized as an attempt to correct the network externality that is inherent in a freedom of contracting regime. However, legislation means that a political agency, rather than the contracting parties, is in control of the innovation process. This agency problem leads to a 'political bias' away from the parties' optimal contract. We argue that in the case of the US the concern about the railroads' public importance has created a bias in favor of going concerns. Once this bias was standardized, path dependency has maintained it within the system to the present day.

This welfare evaluation does not give any regime a clear dominance over the other. The main advantage of the freedom of contracting regime is in preserving the *ex ante*

¹ Network externalities characterize standards in general; see David (1985) for the famous QWERTY example, and Besen and Farrell (1994) for a survey of industrial organization standardization literature.

outlook of the parties. Its main disadvantage is that although the parties have the right objective, they lack a sufficient incentive to innovate and take the system towards that outcome. The legislative regime relieves the system of the under-innovation problem, but introduces the political bias in its stead. An overall welfare evaluation of the two regimes' requires knowledge of structural parameters that we do not pretend to have. Our analysis is confined to establishing the existence of a tradeoff.

To put the tradeoff result in simple words, English insolvency law is conservative and old fashioned, but has the advantage of being focused on the contract it is supposed to serve. American insolvency law is more modernized and innovative, but its view of the underlying transaction is sometimes blurred by what we refer to as *political considerations*.

Related Literature

The joint study of law and corporate finance has gained much momentum, recently, with a series of articles by La Porta *et. al* (1997), (1998). The distinction between common-law and civil-law systems that is central to their work, runs parallel to our distinction between freedom of contract and legislative regimes. We differ, however, from La Porta *et. al.* in several respects. Clearly, in our view the difference between the two regimes cannot be fully appreciated within a static framework: the two systems differ, primarily, in their approach to the innovation process. Also, we believe there is a tradeoff relation between the two regimes, rather than strict dominance as La Porta *et. al.* seem to imply.

Where La Porta *et. al.* treat the English and the American systems as closely resembling one another, we point out some differences. In that respect, we follow some important legal writers. Posner (1996) argues that the English system is actually quite similar to the Continental one. He assigns crucial importance to the role of the judge in the system: in England and on the Continent judges consider themselves as enforcing the law, while American judges view themselves as a source of new law.² We follow this line but maintain that English and Continental corporate laws differ sharply in the origin of the law

² See also Atiyah and Summers (1987) for a related distinction between formal and substantial modes of legal thinking.

to be enforced: private contracts compared to statute, respectively. Hence American corporate law resembles the English law in being case-based, but resembles the Continental law in being driven by constitutional principles rather than by commercial contracts.³

Some of our results are discussed in the modern corporate-law literature. Bebchuk and Roe (1998) develop an argument in favour of ‘path dependency’ in corporate finance.⁴ Also, Bebchuk and Fried (1996) argue that one problem with freedom of contracting arises from non-simultaneous contracting. Parties may contract in a way that violates the rights of earlier contracts without the possibility of ‘readjustment’. Our main contribution relative to the above work is in demonstrating that both path dependency and network externalities are implications of contract standardisation.⁵

The paper is organized as follows: Section 2 starts with a brief description of current insolvency procedures, and proceeds with a comparative analysis of their histories. Our main goal is to establish a *causal* relationship between the innovation regime and the current insolvency procedure. In Section 3 we develop a formal theory of network externalities in standard contracts and analyze the welfare implications of the two innovation mechanisms. In Section 4 we discuss some additional evidence that illustrates under-innovation in England’s freedom of contracting regime. In Section 5 we conclude with a brief discussion of the more general implications of our analysis.

2. History

We describe the current procedures before we examine the historical detail. English receivership is characterized by a great concentration of rights under a *security* called the floating charge.⁶ Upon default, the floating-charge holder may appoint a receiver and take

³ See also Maine (1920) for a classic analysis of comparative legal systems.

⁴ See also Bebchuk (1989) Schwartz (1997) and Schwarcz (1999), and DeMarzo *et. al.* (1998) for a discussion of freedom of contracting in the context of regulation.

⁵ The notion of a standard contract is implicit in the security design literature (See Allen and Gale (1994) and Duffie and Rahi (1995) for exhaustive surveys). It is also explicit in Gale (1992) and Sussman (1999). For a more historical approach see Greif (1993) and Greif and Milgrom (1994) and Hirshleifer (1987).

⁶ See Franks, Nyborg and Torous (1996) for further detail.

possession of the company. All the authority of the board of directors passes to the receiver, who may close the company, sell its assets and do as he wishes in order to repay the loan. The receiver is an agent of the floating-charge holder, and is accountable to him only. Neither junior creditors nor the court are involved in the receiver's decisions. The court cannot relieve the company of its debt, or dilute existing claims (i.e. there is no automatic stay or super priority finance). As a result, most receiverships end with closure or an immediate sale of the business as a going concern.

Chapter 11 of the US code is characterized by a dispersion of rights away from secured claims. Upon default the company may seek court protection from its creditors. The company usually retains control over the business, has the right to defer payments of both interest and principal (i.e. an automatic stay), and has an exclusive right to propose a reorganisation plan. With the court's permission, the company may dilute the rights of pre bankruptcy creditors by raising super priority finance. Also, unsecured creditors have voting rights on the reorganization plan. Companies remain in Chapter 11 for extended periods averaging more than two years. Any reorganisation plan must be agreed by the court and by a majority of each class of creditors.⁷

In both countries, there are other insolvency procedures such as Chapter 7 in the US. There is also a considerable number of voluntary reorganisations or workouts. However, the terms of these reorganisations are affected by the formal procedures that determine the status quo point of the game.

The main purpose of this section is to demonstrate that these differences are the *result* of different innovation regimes. As a first step, we show that English receivership was innovated by freely contracting lenders and borrowers who concentrated control rights under the floating charge. On the other hand, American equity receivership (the forerunner of Chapter 11) was innovated by judges and legislators who moved rights away from freely contracted mortgages. As a second step, we show that some English judges considered receivership to be unfair to unsecured lenders, but freedom of contract prevented them from interfering. In the US the parties have innovated a formula strikingly

similar to the floating charge, but the innovation was aborted in spite of the judges' awareness that it reflected the *ex-ante* intentions of the parties. It follows that in both countries, lenders and borrowers favored a procedure that concentrated control rights in case of distress, while at least some of the judiciary preferred the dispersion of those rights. What made the difference is that in England the contracting parties controlled the innovation process, while in America the judiciary controlled it. Hence, we argue that it was the presence of freedom of contract in England and its absence in America that explains current institutional differences. Under a similar innovation regime it is very likely that the systems would have converged to the same procedure.

While making this historical argument, we also set the scene for the next section's modeling. We show that there is a considerable amount of ambiguity in new legal formulas. It is this ambiguity that imposes considerable cost and some enforcement uncertainty on the innovating parties.

2.1 The UK

2.1.1 The Innovation Regime: Freedom of Contract

The application of freedom of contract to corporate law is a relatively modern phenomenon. It was related to 'Limited Liability' incorporation implemented in a series of Statutes that were passed between 1855 and 1858⁸, and consolidated in the great Statute of 1862. Effectively, this provided England's first modern corporate law.

An elegant statement of the principle of freedom of contracting can be found in the following words: "the State leaves them [i.e. these companies] to manage their own affairs and has no desire to force on these little republics any particular constitution."⁹ Namely, the corporation itself has the sovereign power and authority to innovate the rules under which it would operate and transact. It is well known by now that such a brief and

⁷ These differences in concentration are reflected in large differences in recovery rates for creditors. For example, the unsecured recovers three pence in the pound in UK receiverships compared with twenty nine cents in the in US Chapter 11s (see Franks, Nyborg and Torous, (1996))

⁸ For more detail see Hunt (1936) and Gower (1969) ch. 2-3.

⁹ Robert Lowe, the President of the Board of Trade, in Parliament at 1855, quoted by Hunt (1936) p. 135.

“incomplete” statement about the allocation of control may have a profound effect on the functioning of any institution.¹⁰

The 1862 Act specifies in great detail the format in which each company should announce the rules it had made, but says remarkably little about what these rules should be. For example, it is up to each corporation to decide whether its liability is limited or not. Either way, the decision should be written into the ‘memorandum of association’ and deposited with the Registrar of Joint Stock Companies (§ 17). Further, in case it chose to contract under limited liability, the company should append its name with the word “*limited*” (§ 8) and post it “on the outside of every office... in letters easily legible” (§ 41). In the same spirit, it is up to every company to determine its internal governance structure and the power of its officers. That as well should be written into the memorandum. The Registrar of Joint Stock Companies should be notified “from time to time” of changes made in the names or address of the managers (§ 45). Also, parties transacting with the officers, on behalf of the company, are expected to be aware of this (public) information and make sure the officers do not act beyond their powers (i.e. *ultra vires*).¹¹

2.1.2 Innovation: the Floating Charge

The principle of freedom of contracting implies that it is up to the parties to decide what to do in case of default. Hence, insolvency procedure is an integral part of the debt contract. Indeed, the English procedure was specified by the newly-innovated floating charge, which is an extension of an ordinary commercial mortgage (i.e. a fixed charge); the difference is it covers both present and future assets, tangible and intangible alike. The floating charge was standardized into law by the very process of its own enforcement. An important part of this standardization process was the removal of ambiguities from the innovated formula. The description suggests how conservative English law is, where innovating the new is done by adapting the old.

The first step in this process was modest indeed, and had to do with the innovation of just one word: “undertaking.” A steamship company, the “*Panama, New Zealand and Australia Mail Company, Limited*,” incorporated under the *Companies Act 1862*, issued

¹⁰ See Hart (1995) or Aghion and Tirole (1997).

¹¹ See Gower (1969).

in June 1866, 1000 “Mortgage Debentures” (£100 each) bearing interest of 6% *per annum*.¹² The debt was secured by a mortgage on “the said *undertaking*, and all sums of money arising therefrom” rather than on the a specific ‘fixed’ asset (say, a building or a ship). Shortly afterwards, in July 1868 The *Panama Co.* defaulted. In 1870 the case came before the Court of Chancery.

Like many innovations, new formulas are a source of ambiguity. So the court had to decide what assets were covered by the new security. The debenture holders argued that they were senior to the ‘general creditors’ of the company because the word ‘undertaking’ refers not only to the company’s income, but also to its fixed capital, including the ships. The general creditors argued that “if the directors had wished to give a charge on the ships ... they would have used apt words for that purpose.” Lord Justice Giffard decided in favour of the debenture holders: “the word ‘undertaking’ had reference to all the property of the company’ not only which existed at the date of the debenture, but which might afterwards become the property of the company.”

According to Palmer, “Giffard L.J.’s decision in *Panama Co.* was one of the greatest practical importance ...”.¹³ Essentially, it recognised that a mortgage can be placed not only on a tangible object currently owned by the company, but on a class of assets (tangible or not) which are currently owned by the company, or will be acquired in the future.¹⁴ Such a broad definition of the mortgage allowed the English company to place all its assets, in case of default, under a single ‘floating’ mortgage. Doing so, it also puts the floating-charge holder in complete control of a defaulting company,¹⁵ who may liquidate the company or maintain it as a going concern. Hence the concentrated nature of English insolvency procedure. Note also that once the new security determined the post-default control structure, and it had covered all assets existing at the time of default, the floating charge was no longer a mere mortgage but a complete insolvency procedure. Indeed, the first step in understanding the English law of corporate insolvency is in

¹² Roughly speaking a debenture is a document that fixes the terms of long term, secured corporate debt; see Palmer (1905), p. 243.

¹³ Palmer (1905), p. 265.

¹⁴ Obviously, the institution of a mortgage was known to English for centuries; see Jenks (1922), pp. 89-90, 124-126. See also the diaries of Sir John Evelyn, written in the seventeenth century, and edited by de la Bedayere (1995).

understanding that it is, essentially, an extension of the law of commercial securities into a corporate insolvency law.

Notwithstanding, the procedure was still very crude. It was refined in a series of cases that came before the courts in the next thirty years or so. We describe here just one, the case of the *Government Stock Investment Company v. the Manila Railway Company*, which was heard in the House of Lords in 1896. In that case, the law lords had to resolve a conflict between holders of a fixed and floating charge on the *Manila Co.* Doing so, the court established that the simple act of default was not sufficient to ‘activate’ the floating charge. Rather, the floating-charge holders had to take some action (like appointing a receiver) to achieve that end. Obviously, establishing the exact instant when the floating charge was activated was of crucial importance in the life of a firm in distress, with its assets being rapidly depleted. In this case ‘activation’ received its famous name, ‘crystallisation’. In the language of English lawyers, the floating charge no longer ‘hangs like a cloud’ above the company, but descends and soaks up all the assets that are floating around the corporation.

The *Manila Co.* case is interesting not only for its own sake, but also because it illustrates the role of the judiciary in a freedom of contracting regime. Reading the decision, there can be no doubt that the only concern of their Lordships (including the Lord Chancellor, Halsbury), were the intention of the parties as expressed in the language of the debenture. They dig into the words of the debenture - “I confess that upon first reading the words ... I was impressed ... that the appellants’ interpretation was sound; but upon further examination of the language I have come to a different opinion,” says Lord Shad. They conduct thought experiments, putting themselves in the place of the parties *ex ante* - “any other construction would obviously lead to consequences it is impossible to suppose the parties could have intended,” says Lord Macnaghten. And they wonder about the inherent ambiguity of words - “it is impossible in the construction of any document to exclude the situation of the parties,” says Lord Chancellor Halsbury.

Another illustration of the conduct of the English judiciary can be found in the following episode. By the beginning of this century, the floating charge had become a

¹⁵ Excluding the assets under a fixed mortgage.

common business instrument and was mentioned in the Companies Act, 1900, yet without any formal definition. The courts, however, were reluctant to provide a definition of their own, probably because they were afraid to disturb the ‘natural’ process of institutional evolution. Lord Justice Romer in *Re. Yorkshire Woolcombers’ Association Limited* (1903) says: “The term ‘floating’ is one that until recently was a mere popular term. It certainly had no distinct legal meaning.” He then offers his own description but insists that “I certainly do not attempt myself to give a definition of the term.” We quote here the less technical, but more colourful description of Lord Macnaghten in *Illingworth v. Houldsworth and Another* (1904): “A specific charge is, I think, one that without more fastens on ascertained and definite property ...; a floating charge, on the other hand, is ambulatory and shifting in its nature, hovering over and, so to speak, floating with the property, until some event occurs, or some act is done which causes it to settle and fasten on the subject of the charge ...”

2.1.3 Aborted Innovation

We further illustrate the argument for a causal relation between the innovation regime and insolvency procedures by mentioning the decision of Justice Buckley in the case *London Pressed Hinge Company Limited* (Court of Chancery, 1905). It provides an excellent example of the widely expressed criticism by some English lawyers on the floating charge, and explains how freedom of contract prevented this criticism from being translated into legal reform.¹⁶ The details of the case are of little interest here. What matters is that Justice Buckley felt very strongly about the floating charge and, as a result, had “taken the opportunity to look into the case in order to see whether ... it is possible to prevent the injustice which is now of frequent occurrence.”

The main point in Buckley’s mind was one of fairness: “if the company is wound up there is nothing for anyone but the debenture holders.”¹⁷ It is clear that had it been up to him, Buckley would have innovated a new formula so as to shift some power away from the floating-charge holders, giving the unsecured lenders a better chance to recover something from the failed company. However, he himself reached the conclusion that the

¹⁶See Gloster and Segal (1994) for a modern version of this criticism and for reference to Buckley’s decision.

debenture holders obtained their rights by a lawful and valid contract and thus, “I regret to be driven to [the] conclusion that as the law stands those are the rights of debenture holders.” To be sure, Justice Buckley did not think that freedom of contract was taking English corporate insolvency law in the right direction. But he understood very well that changing the course of this evolution was beyond his powers and authority, and that he had no choice but to enforce the contract.

Between the lines of Buckley’s decision a further point can be discovered, which bears some relevance to the under-innovation problem. A creditor, says Buckley, “may have lent his money or consigned his goods to the company last week, but if he has the audacity to ask for payment and to enforce his legal remedies to obtain it the debenture-holders obtain a receiver ... taking his money or his goods.” It seems that the main concern here is about short term lenders (such as suppliers or trade creditors) who are too small to innovate, or even write their own formal contract. Their very junior position in case of default is not the result of a deliberate decision to contract high-risk unsecured debt, but rather it is a result of their failure to contract at all. Indeed, the English legal system is very effective in protecting rights which were contracted *ex ante*, but it does very little to allocate rights to parties who are too small, poor, and unsophisticated to contractually protect themselves.¹⁸

Even though Buckley could not intervene, the parties eventually did find a way of relaxing the grip of the floating charge. This was done by suppliers retaining title to goods sold on credit, and thereby excluding such items from the pool of assets available to the floating charge. It is noteworthy, however, that this development came quite late in the 1970s.¹⁹

The 1980s also witnessed statutory intervention with the 1986 Insolvency Act. It enacted two new procedures, Administration and Company Voluntary Arrangements (CVAs). Administration allows a court-supervised procedure to reorganise the company

¹⁷ Our own view of Buckley’s notion of fairness is besides the point here.

¹⁸ This problem was later recognized for workers in a 1914 Act, which gave accrued salaries priority in insolvency, regardless of the wording of the debt contract. In some countries, for example Holland, a fixed amount of the insolvent firm’s value must be paid to unsecured creditors by law. Such laws may be interpreted as an attempt to correct this bias.

¹⁹ See for example *Aluminium Industrie Vaassen B.V. v. Romalpa Aluminium Limited* (1976).

as a going concern subject to approval by a majority of all creditors. Crucially, the floating charge holder could always prevent administration by appointing a receiver, thereby preserving the freedom of contracting regime. A CVA permits the debtor company to retain control while it negotiates a reorganisation plan with creditors; the plan is also subject to court approval. As before, the CVA is subject to veto by the floating charge holder.

2.2 The US

2.2.1 The Innovation Regime: Statutory and Legal Intervention

While England created her freedom of contracting regime by an explicit decision of Parliament, America has moved towards legislative-intervention in a much more gradual process. According to Article 1, Section 8 of the 1789 Constitution, “Congress shall have the power ... to establish ... uniform laws on the subject of bankruptcies throughout the United States.” No evidence remains as to the thoughts of the founding fathers with respect to this subject²⁰. It is noteworthy, however, that Section 8 was compiled when hardly any companies existed in America.

While the intention of the founding fathers may only be guessed at, one effect of the Constitution is very clear: the power to innovate new insolvency procedures does not rest with lenders and borrowers but with Congress, and more broadly with the Federal government.²¹ Notwithstanding, Congress failed to pass any enduring statute until 1898.²² The gap was filled by State legislation and by the Federal courts. It seems that the Federal courts were more inclined to act on railroad cases, because such companies typically operated across State lines, and thus individual States did not have effective jurisdiction. Eventually, when Congress did legislate, its legislation largely followed and consolidated the law created by the Federal courts, and thus bears the strong impress of the railroad cases.

²⁰ See Warren (1935), who quotes some views by Madison (1788) on the same subject.

²¹ For additional background on the American system see Lamoreaux (1998).

²² Various Acts allowing individual bankruptcy, were passed in response to widespread failures and panics: in 1800, 1841 and 1867. But were quickly repealed. During the existence of the 1841 Act, 1% of white males cancelled \$441 million of debt with creditors receiving 10 cents on the dollar. See also Berglof and Rosenthal (1999).

2.2.2 Innovation: Equity Receivership

Once the Federal courts were in control of the innovation process, it was inevitable that issues of public policy found their way into the emerging insolvency procedure. In that case, the courts were less concerned with protecting the contractual rights of the creditors, and more concerned with preserving the going-concern value of the business in default. Hence, the courts pursued a line of innovations by which the liquidation rights of the mortgage holders were diminished, in favor of the existing firm and some of the more junior lenders. As a result of this process, post-default rights is more dispersed in America relative to England. It is clear that this process has diminished the *ex ante* outlook of the contracting parties. On the other hand, the American system is much more innovative and sophisticated, and less restrained by history because the Federal courts and Congress can serve as a powerful agency of institutional change.

An important milestone in this process concerned the failure of the Wabash Railway in 1884.²³ It was well known at the time that the railroad was in serious financial difficulty. Just prior to default, the corporation's management petitioned the Federal courts to allow the appointment of two of its own directors as receivers.²⁴ Wabash's lawyers made it clear that this was needed in order to preserve the railroad as a going concern. Otherwise, "as soon as default shall be made, ... supplies, materials, rolling stock, and other personal property will be seized under execution and attachments, and the complainant will be deprived of the means necessary to the operation of said roads." Further, "the present promise of an excellent crop in the west offers strong hopes that a large revenue will be earned by complainant in the near future."²⁵ The court accepted the petition, and charged the receivers to maintain the railroad as a going concern. All attempts by creditors to force a sale of the property were disallowed by the court.

²³ Wabash, St. L. &P. Ry. Co. v. Central Trust Co. of New York and others, Circuit Court, N.D. Ohio, W.D. June, 1884 (Federal Reporter, 22).

²⁴ The company went to the State court first, but the judge directed them to the Federal court.

²⁵ One justification of judicial intervention is that the capital structures of the railroads were very complex. For example, bonds were sold on bits of the railroad thus encouraging competition between creditors and their receiver representatives, and increasing the probability of an interruption of services; see Skeel(1998).

Clearly, permitting the company to appoint its own receiver was, by itself, a serious violation of pre-contracted agreements. It was well established in Anglo-American law that a receiver is an agent of the mortgage holder, appointed upon default, for the sole purpose of seizing assets and paying the debt. It is very clear from the previous paragraph that the lawyers made no secret of their intention of using the receiver in order to preempt the creditors from exercising the rights allocated to them by the mortgage. Comparing the conduct of American courts with English ones, the contrast between the two cannot be sharper. While English judges enforced the rules made by the parties in their mortgage, American judges made their own rules, striking down mortgages contracted by the parties.

The appointment of a friendly receiver led to much corruption, as pointed out by the Hon. Judge Gresham.²⁶ He says: "...it is unusual and novel, to say the least, to entertain a bill filed by such a corporation against its creditors, and at once, without notice, place the property in the hands of one or more of the directors whose management has been unsuccessful. Receivers should be impartial between the parties in interest; and stockholders and directors of insolvent corporations should not be appointed unless the case is exceptional."

Judge Gresham, however, did not think that the basic principle which guided the American system was flawed. To the contrary: "it has frequently been deemed necessary in suits against insolvent railway corporations ... to appoint receivers to *operate and protect* the property pending the litigation."²⁷ He and other prominent judges felt that where a vital public interest was concerned, contractual rights could be violated for the purpose of the common good. The corruption surrounding the Wabash default was not regarded as an inevitable result of the reorganisation process.²⁸ Later writers tended to ignore the corruption altogether. Dewing (1926), for example, refers to the Wabash case as "epoch making," without any reference to the murky details.

²⁶ Gresham himself adjudicated an appeal by some Wabash creditors to allow them to appoint their own receivers in the Illinois part of the railway system

²⁷ See Gresham (1887) p. 119.

²⁸ The receivers gave priority to the repayment of loans that they had provided guarantees for, and signed contracts with companies that they had interests in, at prices that appeared to Gresham to be somewhat above market.

Once the going concern principle was endorsed by the court, deviations from absolute priority were likely if not inevitable.²⁹ Wabash managed to renegotiate a highly favorable reorganization plan for the equity holders and some lenders. Mortgage bonds, which previously bore a 7% coupon, would now receive new 5% bonds, issued under a new mortgage. This effective write down was achieved in spite of the fact that more junior bondholders and creditors retained a [reduced] interest in the firm.³⁰ To achieve this result, the Wabash management did not hesitate to intimidate dissenting debt holders to the plan of reorganization by threatening inferior terms. Again in Gresham's words: "...the boldness of this scheme to aid the purchasing committee, by denying equal rights to all bondholders secured by the same mortgage, is equaled only by its injustice."³¹

The Wabash case was just the first step in a series of many judicial innovations all intended to shift rights away from the mortgaged lenders towards other parties. In a history of the restructuring of American railroads Tufano (1997) concludes, "...judicial innovations in the late nineteenth century substantially weakened the rights of bondholders, by taking away or substantially modifying the rights of seniority and security." (page 38) Another judicial innovation was illustrated in *Rutherford v. Penn. Midland R.R.* (1896) which sanctioned the issue of new debt *senior* to pre-receivership debt, thus laying the foundation to the institution of super-priority finance.³² By the end of the nineteenth century, these innovations were combined into a procedure known as 'equity receivership'. This procedure, with some further refinements, was extended to all corporations in the bankruptcy act of 1934 described as the "old equity receivership reorganisation pressed upon a bankruptcy model with additions." It was very badly drafted and led subsequently to the Chandler Act of 1938. Thus, the procedure initially developed specifically to reorganise railroads and other public services, was subsequently

²⁹ Deviations from absolute priority is one of the main characteristics of the American system; see Franks and Torous (1989).

³⁰ There were concerns that reorganization plans discriminated against particular creditors, especially small ones. In 1899, in the *Louisville Trust Company v. Louisville, New Albany, & Chicago Railway Company*, the Supreme Court concluded that unsecured creditors could not be squeezed out by secured creditors and shareholders. See Skeel (1997).

³¹ See Gresham (1887) p. 114.

³² Short term notes or receivers certificates were issued to keep the railroad going, and were secured on the whole estate. Tufano (1997) mentions one railroad in Alabama issuing such certificates as early as 1872.

extended to all corporations.³³ The 1978 Bankruptcy Reform Act streamlined and modified the process of reorganisation. Legislation has been introduced on many occasions subsequent to the 1978 Act, substantially aided by a standing committee on bankruptcy.

2.2.3 Aborted Innovation: The Floating Lien

The bifurcation of UK and US laws was not inevitable. Indeed, the floating charge came to the attention of the courts in the US a little earlier than in England, but with very different results. The case of *Mitchell v. Winslow* involved a loan for \$15000 made in 1839, to be repaid in four years, semi-annually. The loan was secured by a mortgage on all the machinery, tools and implements ...” which we may anytime purchase for four years from this date and also all the stock which we may manufacture or purchase during the said four years.” In 1842, the mortgagors stopped payment and the mortgagee took possession of the property, including the machine tools and stock, and sold it. In the meantime the company went into bankruptcy and Mitchell (the assignee) sued to recover possession. He argued that a lien could not be extended to property acquired after the mortgage had been registered, and thus the property did not belong to the mortgage holder.

A State judge, Judge Story, refused to give Mitchell title. He concluded that since the mortgage was properly registered, future creditors would have been aware of the mortgage and could not have been misled about the disposition of the assets in the event of default. At the heart of Story’s judgement is that since the mortgage was created lawfully, and since no party was misled, the court should not interfere with the contract. But this freedom of contract approach was later rejected by superior courts, mainly on the grounds of the ‘after acquired property’ rule. It was argued that a mortgage could only be secured on current property, and if new property were acquired, a new mortgage or a

³³ English legislation concerning bankrupt railways was sparse and was confined to new procedures for how creditors might agree on a plan of reorganization. There was no coercion on creditors to prevent them from liquidating the railroads. See the Acts 1846 and 1867.

supplemental mortgage had to be taken out: “*qui non habet, ille non dat*” (what he has not, he cannot grant).³⁴

The attitude of the American courts is a strikingly similar to that of Justice Buckley in England. According to Schwarcz (1997) “the widespread nineteenth century prejudice against the floating charge was based on a feeling, often inarticulate in the opinions, that a commercial borrower should not be allowed to encumber all his assets, present and future, and that for the protection not only of the borrower but of his other creditors a cushion of free assets should be preserved [for those parties, such as the unsecured, who could not contract]. That inarticulate promise has much to recommend it ...” (pp. 416-417). In both England and America the courts felt that it was unfair to concentrate so much power under a single security and wished to disperse rights more evenly across all the parties involved. The difference in outcome is not due to a difference in judicial opinion but, rather, to a difference in judicial authority. Freedom of contract in England has prevented English courts from intervening against the floating charge, while its absence in America aborted the innovation of the floating lien for nearly one hundred years.³⁵

3. Theory

In the previous section we have argued that England’s concentrated insolvency procedure is a result of her freedom of contracting regime, while America’s more dispersed insolvency procedure is a result of her legislative intervention regime. In this section we consolidate these observations into a dynamic theory of legal innovation and corporate insolvency. The model, by its very nature, is abstract. Hence, we focus on just two players: the firm and its lender. In this aggregated setting, England’s concentrated procedure maps into a ‘tight’ procedure that grants the lender a liquidation right with a high probability, while America’s decentralised procedure maps into a ‘loose’ procedure that allows the firm to continue operations with a high probability.

³⁴See Gilmore (1965), pp 33.

³⁵ *Benedict v. Ratner* (1925) clarified the after acquired interest rule and permitted a number of legal devices so as to avoid the pitfalls of the floating lien. Those devices included trust receipts, factor’s lien, and field warehousing. Remaining restrictions against the floating lien were abolished in 1934. However, other Federal legislation enshrining equity receivership permitted creditors to prevent enforcement of the floating lien by entering the Federal bankruptcy process.

Another major objective of the current section is to conduct a welfare analysis of the two regimes. As already hinted in the previous section, we argue in favour of a *trade-off* between the two. The weakness of the freedom of contracting regime is that the innovating parties fail to internalise the benefits derived from the innovation by other parties subsequent to standardisation. Hence, there is less innovation than is socially desirable (under-innovation). On the other hand, the innovating parties do internalise the risk that the innovation is not enforced by the courts, although this problem is likely to vanish once the innovation is standardised. The possibility of non enforcement, makes the innovating parties react to the underlying incentive problem by more than is socially desirable (over-reaction). The legislative (judicial) regime is capable of overcoming these externalities. However, its weakness is, that once the judiciary takes control over the innovation process, it tends to put its own objectives above the parties'. Hence the legislative regime trades off the parties' ex ante outlook for more and better incentives to innovate.

The analytical basis of this section is the notion of a standard contract. It is argued that standardization facilitates the communication process between the contracting parties and the courts. To highlight the role played by the standard contract, this section is organized in the form of a sequence of nested models. First we discuss a world of perfect communication where there is no need for contract standardization. Then we discuss a world where costly communication turns standard contracts into a public good, and the various regimes that may regulate the production of this good.

3.1 The Basic Setting

Consider a discrete-time economy: $t=0,1,2,\dots$, *ad infinitum*. In each *period*, one penniless entrepreneur (endowed with one project) meets one wealthy financier. Both are risk neutral. Their business spans across several *stages* and will be over by the end of that period. The intra-period discount rate is zero, while the inter-period discount rate (relevant for social accounting only) is ρ . The distinction between a period and a stage is a matter of modelling convenience: the parties to the same contract interact across stages, while contracts and standards evolve from one period to another.

The following is a description of the interaction between the financier and the entrepreneur.

- Stage 1: the project requires an initial injection of capital, k . Making some effort, the entrepreneur affects the probability of the project's success, π . We use the words 'probability of success' and 'effort,' interchangeably.
- Stage 2: the project yields a cash flow of y if successful and zero if it fails. Then, the project may be liquidated or it may be continued to stage 3. The project's liquidation value is L .
- Stage 3: if continued, the project yields some non-pecuniary private benefits, b . The private benefits fall into the hands of the entrepreneur, and cannot be transferred to any other party. Note that the private benefits are independent of the realised cash flow, but contingent upon the project being continued.

The entrepreneur's disutility of effort is represented by the function $f(\pi)$, which has the following properties.

$$(1) \quad f'(\pi) > 0, \quad f''(\pi) > 0, \quad f'''(\pi) > 0, \quad f(0) = 0, \quad f(1) = \infty.$$

It is also assumed that $L < b$; namely, the private benefits are (much) larger than the liquidation value. This assumption captures the widespread view (especially among supporters of loose insolvency procedures) that liquidations of insolvent business are often wasteful.

By private benefits we mean that component of economic value which is internalised into a certain firm, but has no market where it can be priced and transferred to a third party in case of distress. As in Aghion and Bolton (1992), the market for liquidated projects is missing because the potential buyer, *i.e.* the entrepreneur, lacks the liquidity which is necessary in order to bid for project and buy the lender out of his liquidation rights. We believe that our assumptions capture the essence of the economic reality of nineteenth-century American railroads. Being the most effective means of long-distance land transportation at the time, their social value was enormous. However, their liquidation value failed to reflect their social value. Our model abstracts from differences among various losers from the liquidation; say, the owners of the railroad and the farmers whose corn will rot if the railroad's operation is interrupted. It is quite possible that this

aggregation does not capture the missing market problem in its full magnitude. Still, we believe that the model captures the essence of the missing market problem, which is that the liquidation decision fails to internalise the going-concern value because the latter is not properly priced.

3.2 The Incentive Problem

Let β denote the probability of liquidation, conditional upon default. Obviously, a high β reflects a “tight” liquidation policy that favours the financier in case of default, while a low β reflects a loose liquidation policy which favours the entrepreneur and preserves, with a high probability, his private benefits. Much of the analysis below is driven by the tension between *ex ante* and *ex post* efficiency. Hence, it is useful to start with the following benchmark result.

Lemma 1. If effort is observable (and verifiable) then: a. $\beta = 0$ (*ex post* efficiency); b. the effort is determined by the equation $f'(\pi)=y$ (*ex ante* efficiency), subject to participation constraints.

Proof: just solve

$$(2) \quad \text{Max}_{\pi, \beta} \pi(y + b) + (1 - \pi)[\beta L + (1 - \beta)b] - f(\pi),$$

using $(L-b) < 0$. ■

The motivation for this result is obvious. Since the entrepreneur’s benefit of continuation is greater than the entrepreneur’s benefit of liquidation, liquidation is *ex post* inefficient. If the effort is contractible, then by standard dynamic programming considerations, both *ex ante* and *ex post* efficiency should be preserved. As a result, the project is never liquidated, even if it yields no cash at all. To put it differently, if effort is observable, failure does not signal low effort, just bad luck. Hence, it should not be penalized. Note also that the *ex ante* efficiency condition is just the equality between the marginal cost of effort (in terms of disutility) and effort’s marginal expected product.

It is thus obvious that the first step towards a more realistic setting is by assuming that effort is a ‘hidden action:’ only the entrepreneur observes his own level of effort. We

assume that all other variables, including cash flows, are observable and verifiable. Let R be the repayment to the financier in the event of success. For simplicity, we assume (from now onwards) that the revenue from liquidation is negligible, i.e. $L=0$. The contract problem is:

$$(3) \quad \text{Max}_{\beta, \pi, R} \pi(y - R + b) + (1 - \pi)(1 - \beta)b - f(\pi),$$

s.t.

$$(4) \quad \pi R = k,$$

$$(5) \quad \pi \in \arg \max_{\pi} \pi(y - R + b) + (1 - \pi)(1 - \beta)b - f(\pi),$$

$$(6) \quad \beta, \pi \in [0, 1], \quad R \in [0, y].$$

Equation (4) is the participation constraint, (5) is the incentive-compatibility (IC) constraint, and (6) provides the feasibility constraints. It is obvious that the contract can no longer preserve both *ex ante* and *ex post* efficiency, and that some liquidation policy may be required.

It is convenient to solve the contract problem in two stages. First, solve for the optimal (R, π) given a certain (arbitrary) liquidation policy, and then solve for the optimal liquidation policy. Denote the value of the first stage by $V(\beta)$. We assume that V is well-behaved as in Figure 1 (see Appendix for more detail about the derivation of the V function). The shape of the V function can be explained intuitively with the aid of Lemma 2.

Lemma 2. A “tighter” liquidation policy will induce the entrepreneur to invest more effort into the project.

Proof: see Appendix. ■

Hence, the optimal policy should aim at some balance between *ex ante* and *ex post* efficiency. The policy should not be too loose for then, by Lemma 2, the entrepreneur will put only little effort into the project. The financier will foresee that effect and hold back his credit. Hence the flat segment in Figure 1. Also, the liquidation policy should not be too tough for then, by Lemma 2, the entrepreneur exerts more effort, but loses the private

benefits more frequently because of excessive liquidation. Hence, the optimal contract is some liquidation policy β^* that maximises the V function (see Figure 1).

3.3 Standard Contracts

Adding asymmetric information has carried our analysis a step closer to the real world, for it explains why an *ex post* inefficient liquidation policy has to be adopted in some circumstances. However, the model of section 3.2 is still quite detached from the reality described in Section 2. For two reasons: first, the model is still a-historic. Parties write down debt contracts, each contract specifying its own liquidation policy. But there is nothing that ties the present policy with past ones. Since in our model the fundamentals are stationary, the system converges to a stationary policy immediately. Had the fundamentals varied along time, the system would have jumped from one policy to another, driven by the fundamentals alone, unconstrained by past policies.

The second reason for the model's lack of realism is that freedom of contract will guarantee a (constrained) Pareto-optimal liquidation policy and effort exertion. This allocation will be inferior to the one under observable effort, but it is the best possible one under the information asymmetry. The parties understand well enough the incentive constraints, and design contracts that can strike the optimal balance between *ex-ante* and *ex-post* efficiency. Definitely, the State can do nothing further to improve their situation. In short, in such a world the best public policy is no policy.

It seems that the very notion of 'corporate law' is meaningless in a world where parties to every contract make their own rules *de novo*, and can do it without any assistance from the State. Hence, we suggest modeling the law as a set of standard contracts, or standard formulas that parties can use as blocks to construct contracts to suit their special needs. We show how the notion of a standard contract makes both history and State intervention meaningful once again.

We argue that the need to standardise contracts results from the difficulty of communicating, in a clear and unambiguous manner, what liquidation policy should be implemented. Note that in our model the liquidation policy is a conditional probability, a number between zero and one that should be quite easy to communicate. In practice,

however, the contract does not express the policy in terms of a real number, but rather as a ‘few words’ in some natural language, English in our example. These phrases instruct the courts how to re-allocate control rights across states of nature. Crucially, the formula has to be written down into the contract *ex ante*, but be enforced by the court *ex post*. Essentially, the written contract is an instrument of communicating the formula across states of nature: from the *ex ante* to the *ex post*. One lesson that can be drawn from the historical section is that this communication process is inherently imperfect and ambiguous. (See for example the debate about the meaning of ‘undertaking’ in the case of the *Manila Railway Co.*)

Note, however, that the above communication difficulties are confined to newly innovated formulas. Once the innovation is enforced, and the deliberation becomes common knowledge, the formula is standardised and the ambiguity disappears. Obviously, a current floating charge, with more than a hundred years of enforcement experience, will not raise the same ambiguities as did the 1870 case of the *Manila Railway Co.*

3.4 Innovation Mechanism: Freedom of Contract

We augment the model of Section 3.2. with the following, highly stylised, incremental assumptions. We make a clear distinction between a newly innovated liquidation policy (still denoted by β_t) and a standardised liquidation policy, $s_t \in [0,1]$. Writing the standard into any contract and then enforcing it is costless. In contrast, wording and enforcing a new innovation costs an amount of B . We interpret B as the value of time and effort invested in wording and enforcing the contract. In addition, enforcing an innovation is uncertain: the court will accept the contract and enforce the new formula with a probability λ , and will reject the new contract with a probability of $(1-\lambda)$.³⁶ If the innovation is rejected enforcement falls back on the existing standard. However, once the innovation is enforced, it replaces the old standard: s_{t+1} equals β_t , conditional upon enforcement. From that point onwards, the new liquidation policy can be contracted and enforced at zero cost.³⁷

³⁶ A more sophisticated formalization would have created a functional relationship between B and λ .

³⁷ The reader may note that the whole issue of out-of-court settlement is ignored in this modeling.

3.4.1 Dynamics

Let e_t denote the (*ex ante*) effective liquidation policy; namely

$$(7) \quad e_t = \lambda\beta_t + (1-\lambda)s_t.$$

Solving the program (3)-(6) under conditions of enforcement uncertainty, one can easily verify that the only change in the system is that now e_t replaces β . It follows that *if* the parties deviate from the standard, and innovate a new formula, they will set the innovation such that the effective policy satisfies³⁸

$$(8) \quad e_t = \beta^*.$$

Given equations (7) and (8), it is easy to solve for the innovation itself; see equation (11) below.

But will the parties innovate at all? The answer is yes, if the value of the innovation, net of the cost of innovation, exceeds the value of the standard, namely

$$(9) \quad V(\beta^*) - B \geq V(s_t).$$

Using Figure 1, it is easy to see how condition (9) defines a range $(\underline{\beta}, \bar{\beta})$ which is the system's 'absorbing set:' innovations take place out of this set, but once inside the set innovations stop and the system will come to a rest. Hence, we get the following dynamic system:

$$(10) \quad \text{if } s_t \in (\underline{\beta}, \bar{\beta}), \text{ then no innovation takes place, and } s_{t+i} = s_t, \forall i > 0.$$

$$(11) \quad \text{if } s_t \notin (\underline{\beta}, \bar{\beta}), \text{ the formula } \beta_t = \left(\frac{1}{\lambda}\right)\beta^* - \left(\frac{1-\lambda}{\lambda}\right)s_t \text{ is innovated; further,}$$

$$s_{t+1} = \begin{cases} \beta_t & \text{with prob. } \lambda, \\ s_t & \text{with prob. } (1-\lambda). \end{cases}$$

Now, equation (11) defines a difference equation in the standard

$$(12) \quad s_{\text{subsequent}} = \left(\frac{1}{\lambda}\right)\beta^* - \left(\frac{1-\lambda}{\lambda}\right)s_t.$$

Note that the left-hand variable in (12) is $s_{\text{subsequent}}$, not s_{t+1} . That means that each standard yields the subsequent standard deterministically, but the transition from the current to the next standard is Markovian, with a transition probability of λ . Hence, transition to the

³⁸ We assume that the effective policy is never constrained by the feasibility condition $\beta \in [0, 1]$.

subsequent standard will happen right away with probability λ , after one period with a probability $\lambda(1-\lambda)$, after two periods with probability $\lambda(1-\lambda)^2$, and so on. The process will converge to a stationary point once the motivate to innovate vanishes, namely once the process enters the ‘absorbing set’ $(\underline{\beta}, \bar{\beta})$, which is represented by the shaded square in Figure 2. More formally:

Lemma 3. Suppose, that $\lambda > 1/2$ and $B > 0$. The system will converge, with dampened oscillations, into the “absorbing set” $(\underline{\beta}, \bar{\beta})$, around the *ex ante* optimal contract β^* .

Proof: immediate.³⁹ ■

An important property of our system is that the graph of the difference equation (12) is downwards sloping. To understand why, suppose the economy starts with an initial standard, s_1 , which is ‘too loose’ relative to the optimal policy β^* . Since the initial conditions lie out of the absorbing set, an innovation takes place. The purpose of the innovation is to tighten-up the liquidation policy. But then, the parties over-react. The reason is that the innovating parties take into consideration the probability that the court will refuse to enforce the innovation, in which case enforcement will fall back on the existing (too loose) standard. Hence, in order to induce the entrepreneur to induce the right amount of effort, the parties have to contract an over-tightened policy. However, once it is enforced, it is standardised, and from then on it can be enforced with a probability one. Since s_2 lies within the absorbing set, no further innovation takes place, and the system will stay with a standard that is too tight.

Hence, our model explains how a freedom of contracting system may converge to a point other than β^* . Note this is a result of both the enforcement uncertainty λ and the innovation cost B . (It is easy to verify that the system converges to β^* if either $B=0$ or $\lambda=1$ and the initial conditions are out of the absorbing set). In other words, the innovating parties deviate from β^* for good reasons. Indeed the effective policy at the time of the innovation is the optimal one, but once the innovation is standardised, and once the system

is stationary, the parties are left with a standard that is different than β^* . That highlights the ‘path dependency’ property of financial institutions. A system may get stuck with an institution that is a ‘living fossil’ in the sense that it reflects the historical circumstances at the time of the innovation rather than the current fundamentals. Another way to highlight the system’s path dependency is by noting that a small change in the fundamentals, may affect β^* , but may fail to trigger any innovation, if the standard is still within the new absorbing set.

Essentially, the dynamics from point s_I provides our explanation for England’s currently tight insolvency procedure. Following the great Incorporation Acts of 1855-1862, the English corporation was operating under very loose insolvency procedure. This is because the Act of 1862 did not bother to specify any penalty for default, but rather left it to the parties themselves. But when English lenders and borrowers came to tighten the system up, they overreacted, fixing the system into a “too tight” law for the next hundred years. An even bolder interpretation of our model is that the initial conditions were actually those of the 1720’s Bubble Act. These were very tight as the law has insisted on full personal liability for any business association. Towards the end of the eighteenth century the parties found ways to circumvent this tight system and to contract limited liability. Parliament had to give in, putting the system at the initial point of the 1862 Act from where the system has converged to the currently tight procedure.⁴⁰ Hence, there might have been two rounds of innovations around the β^* point (namely s_0 , s_I and s_2 in Figure 2). It is noteworthy that this explanation does not rely on the type of the innovation regime alone, but rather, on the regime and on the initial conditions. With different initial conditions (say point \tilde{s}_0 in Figure 2) the system could have converged to a very loose procedure.

3.4.2 Welfare Analysis

In this section we analyse more carefully the welfare properties of a freedom of contracting regime. We argue that a failure to approach β^* reflects a fundamental market failure, by which some benefits of subsequent parties are ignored (under innovation) and

³⁹ There is a possibility of endogenous cycles, which is of limited interest in the current context.

⁴⁰ See Sussman (1998) for a summary of this episode.

some benefits of the innovating parties are over-weighted (over-reaction). More precisely, we show that:

Lemma 4. Due to network externalities, a freedom of contracting regime may fail: some welfare improving formulas may not be innovated at all (*under-innovation*); even when innovations take place, the socially optimal policy is not achieved (due to *over-reaction*).

Proof: Consider a system that has converged to a point, say, $s_2 \neq \beta^*$ within the absorbing set. Obviously, no innovation takes place because

$$(13) \quad V(\beta^*) < V(s_2) - B.$$

The value of this economy is:

$$(14) \quad W_{FC} = \frac{1+\rho}{\rho} V(s_2)$$

where *FC* stands for freedom of contract. Now suppose a ‘benevolent dictator’ coordinates an innovation β . Note that there is a probability λ that standardisation would take place right away, and a probability $(1-\lambda)$ that it would fail, in which case another attempt will be made, with value W_{BD} and so on, recursively (*BD* stands for ‘benevolent dictator’). Hence, The value of this economy is

$$(15) \quad W_{BD} = [V(e_2) - B] + \frac{1}{1+\rho} \left[\lambda \frac{1+\rho}{\rho} V(\beta) + (1-\lambda)W_{BD} \right]$$

where,

$$e_2 = \lambda\beta + (1-\lambda)s_2.$$

We can solve W_{BD} out of equation (15):

$$(16) \quad W_{BD} = \frac{1+\rho}{\rho+\lambda} \left[V(e_2) + \frac{\lambda}{\rho} V(\beta) - B \right].$$

Now, suppose the benevolent dictator sets the innovation at β^* . Since $V(\beta^*) > V(e_2)$,

$$(17) \quad W_{BD} > \frac{1+\rho}{\rho} \left[V(e_2) - \frac{\rho}{\rho+\lambda} B \right].$$

Comparing equation (13) with equations (14) and (17) it is clear that the benevolent dictator may innovate where the parties will not. (Note that $\rho/(\rho+\lambda) < 1$, and typically quite small as $\lambda > 1/2$).

Note, however, that the benevolent dictator's optimal innovation is not β^* ; calculating his first-order condition out of equation (16) we get

$$(18) \quad V'[\lambda\beta + (1-\lambda)s_2] + \frac{1}{\rho}V'(\beta) = 0.$$

Note also that the benevolent dictator's innovation is different than the parties; this is because the parties' condition (8) can be expressed as

$$(19) \quad V'[\lambda\beta + (1-\lambda)s_2] = 0. \quad \blacksquare$$

The intuition behind the result is straight forward. On the one hand, the innovating parties (and even more so, potential innovators that do not innovate) under-innovate: they internalise their own benefits out of the innovation, but fail to internalise the benefits subsequent parties will draw from it. On the other hand, the innovating parties over-react to their own incentive problem: they internalise the enforcement uncertainty, but ignore the fact that once the innovation is standardised the enforcement uncertainty will vanish, leaving subsequent parties with a standard which is either too loose or too tight. To put it differently, in a freedom of contracting regime, the innovating parties ignore the long-run benefits of the innovation, and give too much weight to the enforcement uncertainty which is a short-term problem that exists only in the period of transition from the old to the new standard.

It is noteworthy that the problem is inherent to a freedom of contracting regime, and cannot be fixed by giving some subsidies at the margin. Suppose for example the benevolent dictator provides a direct subsidy to the innovation at a cost, B so as to promote financial innovations. That, indeed, will promote innovation by diminishing the size of the absorbing set. But that will not solve the problem because the parties will still over-react. If the innovation is fully subsidised, the system will converge eventually to β^* , but this is not, in general, the long-run social optimum (unless $\rho = 0$, see equation 18). Indeed, such a subsidy will induce excessive innovations as the system converges to the

long-run standard through repeated oscillations instead through a one-shot innovation as implied by *Lemma 4*. It follows, thus, that in order to restore social optimality the benevolent dictator will have to resume direct control of the innovation process and ensure that the over-reaction bias is eliminated.

Another way to view the results of this section is the following. In our model, the law contains the standardization system that supports private commercial contracting. Like other standards, standard contracts are public goods. In that respect, the under-innovation result is just a reincarnation of the familiar result of under-production of public goods in a competitive equilibrium. Or to put it yet differently, a freedom of contracting regime allocates too little resources towards institutional change so that the equilibrium is too path-dependant. Had the State been a benevolent dictator, a swift transition to the social optimum would have been guaranteed.

3.5 Innovation Regime: Legislative Intervention⁴¹

Obviously, the State is not a benevolent dictator. Had it been, the following proposition would have been trivially valid: a command economy could always do (weakly) better than a *laissez faire* economy because the benevolent dictator could mimic the *laissez faire* allocation where it achieves Pareto optimality, and improve on it where it fails. The reason why the practical relevance of this statement is a miniscule is that any policy requires delegation of power to the State, and the State may bias its action away from the benevolent dictator's action. We call this phenomenon a 'political bias'. Note that these words have no normative content. The only way an economy can get around the under-innovation problem is by delegating power to the State. That would create an agency relationship between the State and the public at large. The bias is an inevitable outcome of this relationship. But it does not mean that the welfare loss from the agency relationship dominates the welfare gain from handling the public good and the under-innovation problem.

Suppose that judges and legislators are the political agents. Suppose, also, that the political agent has his own 'standardization technology.' Hence, he can hire the country's

best legal minds (possibly the judges themselves), pay them $G \geq B$ (*i.e.* more than the individual businessman may pay his own lawyer), but in return receive a formula which is so clear that it can be enforced without any uncertainty. Obviously, by this assumption alone we eliminate any dynamics from the analysis of this section.

We suggest two alternative formalizations of the political bias. First, it is likely that the private benefits are have a higher weight in the objective function of the political agent relative to the public at large. This is either because the private beneficiaries have a greater political power than the holders of the liquidation rights,⁴² or because of the judges recognize the miss-pricing problem of the going concern (as discussed in Section 3.1 above). Hence, one may write the objective function of the political delegate as:

$$(20) \quad W_{private-benefits}(\beta) = \frac{1+\rho}{\rho} [\mu(1-\beta)b + (1-\mu)V(\beta)], \quad \mu \in [0,1].$$

An alternative formalization of the political bias relies on the observation that the political agent tends to disturb the balance between *ex-ante* and *ex-post* efficiency in favour of the latter. This observation is especially valid if the political agent is a judge, who starts reviewing the situation only after the firm made default, and tend to ignore earlier development, especially the selection of effort. Even if the judge internalizes the effect of the standard on subsequent generations, by treating the effort decision of the current generation as sunk, will have a bias in favor of *ex-post* efficiency:

$$(21) \quad W_{ex-post}(\beta) = (1-\beta)b + \frac{1}{\rho} V(\beta).$$

Both these formalization will result in a looser insolvency procedure.

Lemma 5. Both the *ex-post* and the private benefit bias tend to loosen the liquidation policy (relative to β^*). The *ex-post* bias is stronger the higher is the discount rate.

Proof: Just differentiate equations (20) and (21), and verify that the derivative is negative at the point β^* . ■

⁴¹ The ‘legislative regime’ abbreviates for a ‘legislative-judicial regime.’

⁴² See Berglof and Rosenthal’s (1999) analysis of the political influence of various constituencies on American bankruptcy legislation.

It is noteworthy that most real world systems do not allocate full power of innovation to the parties, nor to judges and legislators. Rather, the power to innovate is shared by parties and State creating a hybrid of the freedom of contracting and the legislative innovation regimes. It is easy to see what the outcome will be:

Lemma 6. Consider a mixed economy where the State sets a non-binding standard policy. The legislator's objective is given by equation (21). Then, the legislated liquidation policy cannot fall below $\underline{\beta}$.

Proof: immediate. ■

In this particular respect the US is not a mixed system in the precise sense above because the parties cannot *ex-ante* contract Chapter 11 away.⁴³ On the other hand, England's 1986 Insolvency Act introduced a new code, Administration, and is an excellent example of a mixed system. This code provides an alternative to liquidation or receivership but there is no compulsion to use it.⁴⁴ It differs from the other codes in that it allows for a three month compulsory stay of creditors claims, non-unanimity provisions for the approval of any proposed plan of reorganisation, and court supervised bargaining. There are a modest number of Administration orders each year and serves as evidence for the existence of under-innovation: the parties have failed to innovate a looser procedure, but found it advantageous to use one after it was innovated by the State.

4. Under Innovation: More Evidence

One of the main implications of our analysis is that a freedom of contracting regime tends to under innovate. We describe very briefly some evidence in support of this conclusion.

⁴³ This is not to be confused with the ability of the parties to settle out of court, or even to 'pre-pack' a reorganization plan to be approved and enforced by the court. The obvious reason is that the 'disagreement point' (and thus the outcome) of such renegotiations are still determined by the legislator.

⁴⁴ Under this code, if the parties do not contract a floating charge *ex ante*, or if the floating charge holder (and the court) gives consent *ex post*, then the company can be placed in Administration.

Posner (1996) argues that the average age of judicial citations is in general higher in England than in the US. Using a sample of Court of Appeal cases from England in 1994 and a similar sample from the US Supreme Court (1974-75), he finds that the average age of cases cited in judgements of English Bankruptcy cases is 93 years compared with 37 in the US.⁴⁵ One interpretation of his findings is that a higher pace of innovation in America depreciates cases more rapidly and this results in a younger vintage of citations.⁴⁶ In similar research (available on request), we find significant evidence in favor of very long memory in the English system. We build a sample of 284 receivership cases, tried between 1994-1998, which contains 2150 citations. We find that 20% of the citations are prior to World-War I, while only 17% belong to the period 1914-1970.

Additional evidence is provided by the 1986 Insolvency Act. As described previously, this innovation did not violate the principle of freedom of contracting. The law suggested alternative forms of insolvency procedures (Administration and Company Voluntary Arrangements), but it was up to the parties whether to use them or not. The data show a very gradual ‘learning curve’ after 1986: Administrations and CVAs were only 12% of receiverships in 1987, but the number has increased to 47% in 1998. That the scheme was voluntarily adopted is evidence that it created value. The question is, why was it not innovated privately? To put it differently, had the cost of innovation been insignificant, we would have expected that an innovation by a public agency would make little difference.

5. Conclusion

In this paper we have showed how insolvency procedures in England and America have been affected by their respective innovation regimes. The ideas expressed are quite general, and can be applied to other institutions and other aspects of corporate law. We conclude by restating four points in a way that highlights their general applicability.

First, corporate law can be conceived as a set of contractual standards. It follows that *some* aspects of the corporation should be understood by reference to the process by

⁴⁵ See Table 3.1 pp. 86-87. His sample is quite small.

which standards are formed. Second, contractual standards are historical objects, and thus highly path dependent. Hence, some explanations in corporate finance have to be historical in nature. Initial conditions matter and institutional memory is very long. Real time is measured in decades rather than months. Third, contractual standards are public goods. Therefore, the State may be involved in the formation of standards. Such an involvement, however, gives rise to political-agency problems. The basic dilemma is whether to produce the public good and bear the political bias, or to avoid the bias and under-innovate. Hence the fourth point: *laissez-faire* institutional change, *i.e.* freedom of contracting, does not guarantee that the system converges to the socially-optimal institutions, nor does it guarantee that the convergence process is the socially-optimal one.

That suggests a modified view of the corporation. It is not just a nexus of contracts, but rather a nexus of contractual standards and a mechanism of innovation. This view has some important policy implications, especially in places where the corporation is subject to rapid institutional and legal change: the transition economies or the European Union are examples. We argue that the real question is not just what standard should be adopted, but rather, how to create the right environment for corporate innovation and change to take place.

⁴⁶ Posner (1996) explains it differently. He suggests this is evidence of the greater clarity of the English system.

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Appendix: the V function

V is a value function for “partial solution” of the program (3)-(6), taking the liquidation policy as given. This partial solution is derived with the aid of Figure A.1, used previously by Suarez and Sussman (1997), where it is discussed with further elaboration.

Differentiating (5) we get

$$(a.1) \quad f'(\pi) = y + \beta b - R.$$

Hence, plotting a counter-clockwise 90° -rotated graph of the f' function, its origin fixed at the point $y + \beta b$ (the IC curve in Figure A.1), we get the incentive-compatible effort as a function of the repayment. The participation constraint (4) is represented by a rectangular hyperbola (the PC curve in Figure A.1). Since the IC (PC) is concave⁴⁷ (convex) with respect to the origin, the two curves have, at most, two intersection points. Now, the entrepreneur’s profit is represented by the shaded area in Figure 1 [plus a constant $(1 - \beta)b$]. Hence, in case there are two intersection points, the optimal contract is at the higher-left of the two (see Figure A.1)⁴⁸. In case the IC and PC curves don’t intersect, the feasibility set (4)-(6) is empty, and the financier will not extend credit to the entrepreneur.

Proof of Lemma 2: A higher β will shift the IC curve rightwards, resulting in more effort. \checkmark

For subsequent use, we calculate, the precise effect of the liquidation policy upon the repayment:

$$(A.2) \quad \frac{dR}{d\beta} = \frac{b/f''}{1/f'' - \pi/R} < 0.$$

⁴⁷ Since $f''' > 0$, the IC curve is concave with respect to the origin.

⁴⁸ This point has to satisfy the feasibility constraints in (6). Note that these conditions constrain the solution to the square from the origin to point y on the vertical axis, and point 1 on the vertical axis.

The inequality follows from the negativity of the denominator, which is just the difference between the slope, in absolute terms, of the IC and the PC curves (at the point of the optimal contract).

Substituting the partial solution R, π into the objective function (3) we get the value $V(\beta)$ for the given liquidation policy; if the feasibility set (4)-(5) is empty (a possibility mentioned above), in which case we define $V = 0$. Obviously, the complete solution to the program (3)-(6), and especially the optimal liquidation policy is at the maximum of V ; we denote it by β^* .

We assume that the parameters of the problem are such that β^* is a corner solution (see Figure 1). To see that such parameters exist, we explore the properties of V , with the aid of the following expression,

$$(9) \quad \frac{dV}{d\beta} = \pi \left[b + \left(-\frac{dR}{d\beta} \right) \right] - b.$$

For low β 's, the feasibility set is empty; V is flat and equals zero. At a certain critical β , IC and PC are tangent. At that point, V' tends to plus $+\infty$ [because the IC and PC curves have the same slope and the denominator of (8) tends to zero, from below]. As β grows further, the IC curve moves rightwards, and the feasibility set is non-empty, the project is financed and $V > 0$. But when β gets close to 1, and for some parameter values, the derivative (9) is negative: if the IC curve is asymptotic to some upper bound smaller than 1, $dR/d\beta$ is small, the brackets are close to b , and (9) is negative.

Figure 1: Value of Project to the Entrepreneur

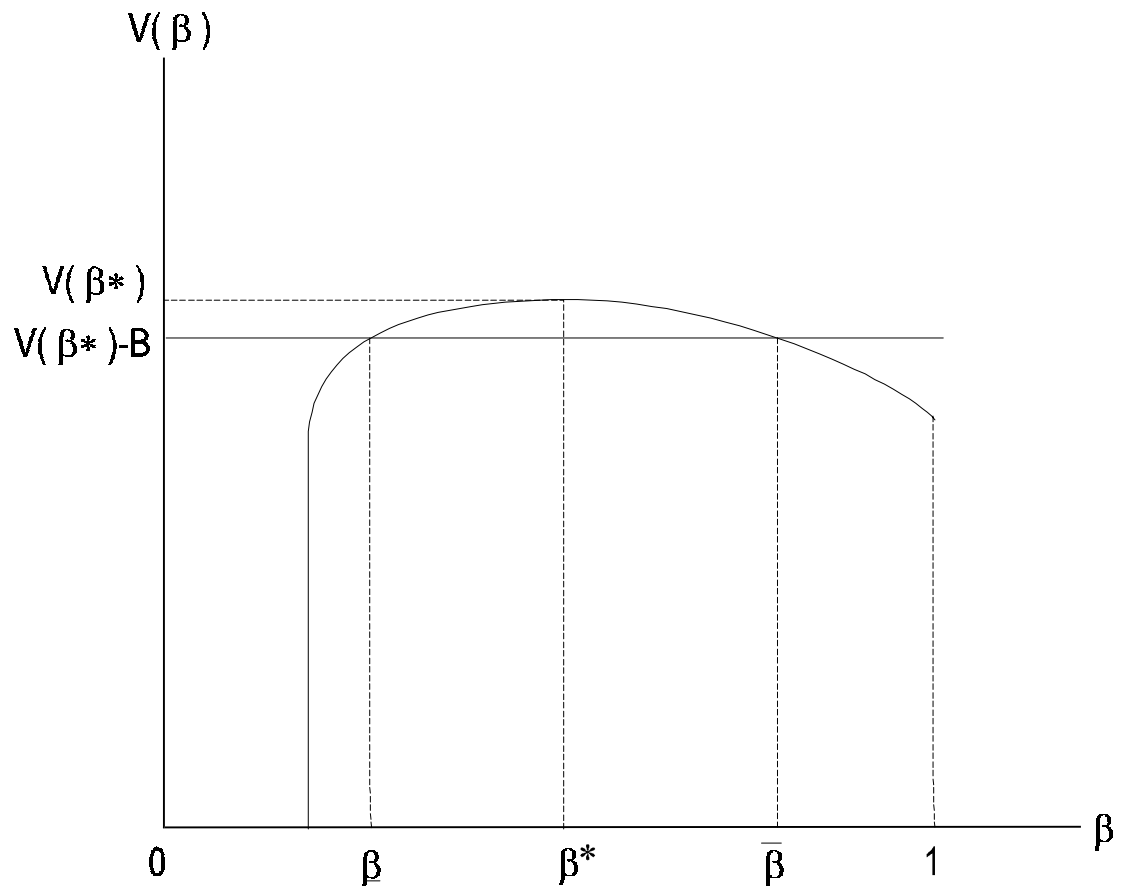


Figure 2: Overreaction

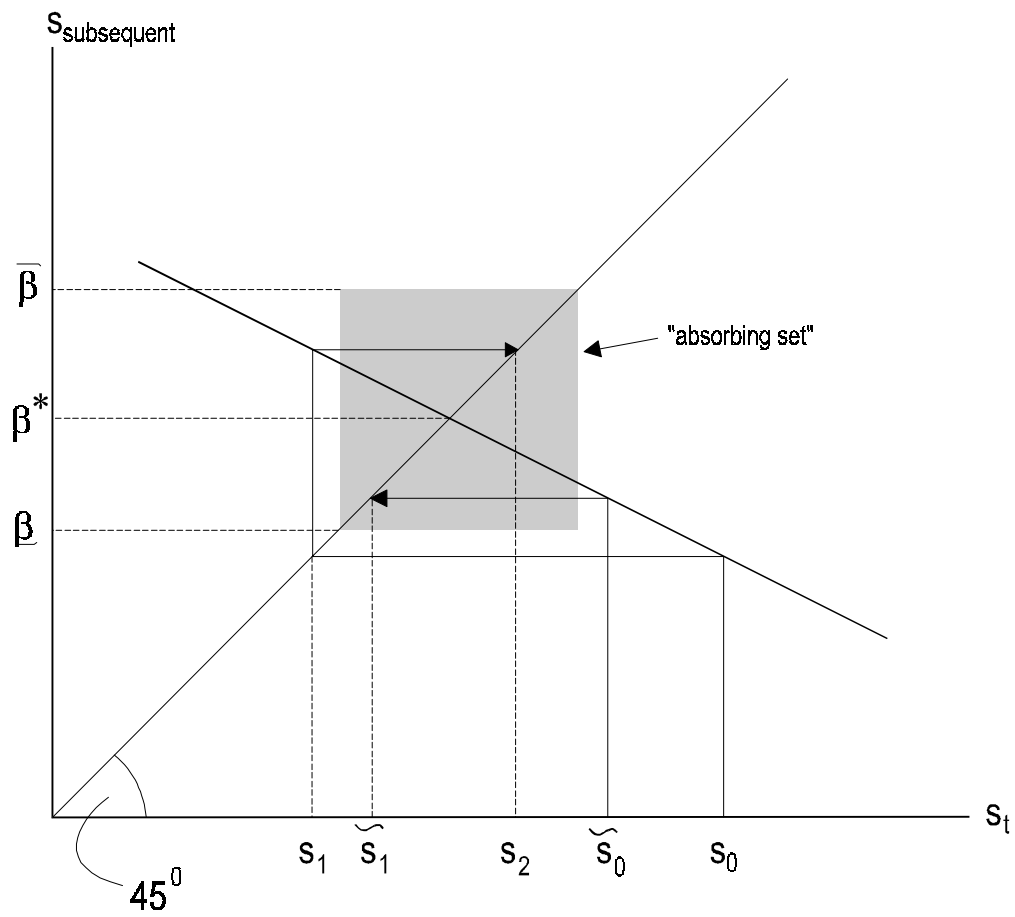


Figure A.1: The Contract

