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ABSTRACT

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Contract law and the economics of contract have, for the most part, developed independently of each other. In this essay, we briefly review the notion of a contract from the perspective of lawyer, and then use this framework to organize the economics literature on contract. The title, Contracts between Legal Persons, limits the review to that part of contract law that is generic to any legal person. A legal person is any individual, firm or government agency with the right to enter into binding agreements. Our goal is to discuss the role of the law in enforcing these agreements under the hypothesis that the legal persons have well defined goals and objectives.

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> The duty to keep a contract at common law means a prediction that you must pay damages if you do not keep it–and nothing else.
>
> Oliver Wendell Holmes, The Path of the Law, *Harvard Law Review*, 1897.

1 Introduction

Contract law and the economics of contract have, for the most part, developed independently of each other. While contract law has existed for centuries, if not millenia, the economic analysis of contract is both very recent and largely divorced from the content and structure of contract law.[1] Current reviews of contract theory, such as Laffont and Maritmort (2002) and Bolton and Dewatripont (2005), for example, do not discuss either the substantive law of contract or the role that courts play in enforcement. In this essay, we begin to bridge this gap.

We briefly review the notion of a contract from the perspective of a lawyer, and then use this framework to organize the economics literature on contract. The review thus provides an overview of the literature for economists who are interested in exploring the economic implications of contract law. The title, *Contracts between Legal Persons,* limits the review to that part of contract law that is generic to any legal person. A legal person is any individual, firm or government agency with the right to enter into a binding agreement. Our goal is to discuss the role of the law in enforcing these agreements under the hypothesis that the *legal persons* have welldefined goals and objectives.[2]

The possession of well-defined preferences does not imply that *legal persons* never make mistakes. In fact, a key ingredient to understanding the observed form of contract law requires the introduction of some imperfections in decision making. Since the seminal work of Herbert Simon, there has been little disagreement that a complete understanding of human institutions requires the incorporation of errors in decision making, however, there is little agreement regarding the best way to achieve this goal. In this review, we follow the widely accepted hypothesis that imperfect and asymmetric information are key ingredients of any theory of contract form. We show that these elements are sufficient to tie together the various strands of the literature. We then outline a plan for future research.

The review is divided into three substantive parts. The next section focuses upon the

[1] The introduction of Laffont and Maritmort (2002) provides a nice historical overview of the development of incentives contracts.

[2] For example, the field of corporate governance (see Hermalin (2011)) is concerned with the design of legal institutions that ensure that firms have preferences that correspond to maximizing firm value.

primary legal concepts on which contract law rests – including the notion of a legal person and what is meant by an enforceable agreement. We focus on the substantive remedial regime that determines how contracts are enforced and on two features of the process of adjudication – fact-finding and interpretation – that determine what obligations the parties have and when they have been breached.

Part 3 examines how the implicit assumptions underlying the economic literature on contract compares to the substantive law of remedy. Economic models of contract make stylized assumptions regarding how the law enforces contracts. In many cases, these assumptions are consistent with existing law. In some cases, particularly when the contract requires a person to act in a particular way, the implicit assumptions are inconsistent with existing law in jurisdictions such as the United States. This inconsistency is manifest in some recent work that builds upon results in mechanism design. The same inconsistency may help explain, as Jean Tirole (1999) observes, the gap between the predictions of these models and observed contract forms. In addition, section 3 discusses the literature in economic analysis of law that begins to bridge the gap between the spare assumptions on remedial regime in the economic literature and the complexity of the law.

Section 4 discusses the sparse literature on fact-finding and interpretation. This literature asks two questions:

1. When parties write an incomplete contract, how should a court determine the obligations that the parties have?

2. How do courts find facts? In terms of the economic literature, what is the technology of verification?

Section 5 concludes.

We deploy the conceptual scheme of contract law summarized in section 2.2 to organize a summary of the literature on the economics of contract. Our characterizations of some of the underlying economics literature may thus seem a bit askew,but we hope that the legal perspective will open additional avenues of research.

2 Contract Law

In this section, we set out the legal view of contract. We begin with the legal view of agency for two reasons. First, it provides a sharp contrast with the economic view. Second, as most contracts are between firms, we require a conception of a firm and when a transaction

is between firms rather than within a firm. Our conception of a firm will rely on some basic legal concepts that have consequences for the legal treatment of different types of transactions. We proceed in the second subsection to a characterization of contract law.

2.1 Legal Personality

The economic agent is characterized by her preferences; the legal agent is characterized by her legal capacities to hold and convey property, to make contracts, and to sue and be sued. These capacities are central to each of the different legal forms that a firm might take: sole proprietorship, partnership, business corporation, trust, or not-for-profit corporation.[3] Natural persons (who have reached the age of majority and are mentally competent) also have these properties. Hansmann (2011) discusses the importance of asset ownership (and, implicitly, some aspects of exposure to suit). As Hansmann notes, legal personality segregates a set of assets owned by the entity. Consider for example a corporation C. C owns some set of assets A that are subject to claims from other persons. Liability of C is limited (to the asset pool A) because the corporate form protects the assets of other legal persons, in particular, the owners of C, from valid legal claims against C.[4]

We focus on the legal person's right to make contracts and to sue and be sued. Legal persons act through natural persons. When the legal person is simply a natural person, both action and identification of which acts are attributable to her is relatively straightforward. Many legal persons, however, are complex; they are constituted by and encompass large numbers of other legal persons, both natural and artificial. For example, law firms thirty years ago were typically organized as partnerships. Each partner was a natural person as were all employees of the partnership (but not all its clients, many of whom were corporations). Some actions of the partners and their employees were attributable to the partnerships and others not. Similarly, a business corporation has shareholders, managers, directors, employees, and customers; some members of each of these classes may be natural persons but others may be corporations. It may also own, wholly or in part, other corporations. Corporations, of course, act only through individuals, some but not all of whose acts are attributable to the corporation.

[3]The attributes of legal personality of the different forms of business organization vary somewhat. So, for example, partnerships are not treated as "persons" for tax purposes while corporations are. More importantly, a partnership can be terminated at will by any partner at any time while corporate death (or dissolution) is more complex. For a brief introduction to the concept of legal personality see Clark (1986),section 1.2.3.

[4]The protection of assets of other legal persons is not complete. In some circumstances, a claimant T on C's assets may either "pierce the corporate veil" and make claims against the assets of the owner of C when A is insufficient to satisfy T's claim or claim assets that have been transferred to third parties..

Two bodies of law solve these problems of attribution: organizational law and agency law. Organizational law addresses problems of the internal organization of the firm or legal person. Often, in conjunction with constitutional documents of the firm – in business corporations the articles of incorporation and the by-laws, organizational law identifies a decision procedure for the firm. In business corporations, this decision procedure is complex, with final authority for most decisions given to the board of directors though some decisions require shareholder approval and many decisions are delegated to management.[5] The law of agency determines which actions may bind the legal persons. Under what circumstances, is the fictitious person responsible for the acts of its agents such as employees? Even a natural person might benefit from having an agent, someone who can enter contracts for her and make other decisions. The law of agency governs which actions of the agent belong to the agent and which to the principal.[6] We ignore here actions that lead to harm to third parties and focus on exchange.[7] If the agent has actual or apparent authority[8] to act on behalf of the principal (here the legal person), then the principal is bound by the agent's actions while, generally, the agent has no liability to the contracting party. The principal grants authority either expressly or impliedly; in some instances, it may appear that the agent has authority even when she does not. Agency law places the risk of error on the principal. In what follows, we shall generally assume that the legal person acts through agents with actual authority.

Legal persons may also sue or be sued. We might differentiate contracts between firms from contracts between the firm and its employees and from contracts between parts of the firm in terms of the remedies available to resolve disputes. In essence, the law treats this last class of transactions – transactions internal to the firm (but not employment contracts)[9]

[5]On corporate law generally, see Clark (1986).

[6]Clark section 3.3 offers a brief introduction to agency principles. See also Institute (2006)

[7]When an individual acts as an agent on behalf of someone else, two questions arise. We emphasize the question raised in the text: under what circumstances is the principal responsible for the acts of its agents? This question might arise in at least two contexts: contract and tort. In the first case, agency law generally determines when the acts of the agent bind the principal to contracts that the agent makes on her behalf. When an agent harms a third party, tort liability arises and the doctrine of vicarious liability determines when the tort victim also has a claim against the principal. For economic analysis of vicarious liability see Kornhauser (1982), Sykes (1981) and Arlen and MacLeod (2005).

The second question asks under what circumstances is the *agent* relieved of responsibility for her actions. Again, the analysis of contract and tort differs. Usually, agents are not responsible to the promisee for the contracts that they enter on behalf of their principals. They might, however, be liable to the principal if they acted outside the scope of their authority. See Restatement (third) of Agency sections 6.01, 6.04, 6.10, 6.11. In tort, agents generally are responsible for actions that harm third parties though public officials in the United States benefit from a qualified immunity from tort liability for actions taken in furtherance of their official duties. See generally Institute (2006) section 7.01

[8]On apparent authority see Institute (2006) section 3.03

[9]Contracts between the firm and its employees are generally governed by contract law, employment law,

– differently from market transactions. Several distinct questions arise here. Consider some actor X. We may ask first: What rights does X have? Second, what forum is available to adjudicate these rights? More specifically, are state courts available to adjudicate these rights? Third, and finally, if state courts are available, is X able to assert these rights in this forum? In any given dispute, the law provides complex answers to these questions. We provide a brief sketch of the legal terrain (in the United States) with respect to disputes arising from exchange.

In economics, a legal person C is usually a business corporation though, in some contexts, C might be a natural person or a governmental entity. Suppose C is a business corporation. Hence, C has relations with its employees and its subsidiaries, both sets of which are sets of legal persons, with outside firms and with outside consumers. Disputes may thus arise from interactions among employees or subsidiaries or groups of employees, or between agents of the firm and outside suppliers or consumers.

The first question concerns the substantive rights the disputants have. The legal person to a large extent makes its own law to govern its internal disputes; Williamson (1991) makes this point. Thus, our corporation C has the power to determine, within limits,[10] the substantive rights that employees and subsidiaries have against it and the substantive rights that employees and subsidiaries have against each other. C's power to makes its own law, however, may be limited by state law or state law may create a set of default rules to govern without explicit internal law. Employment law provides a good example. Internal rules may not violate employment discrimination rules and the doctrine of at-will employment serves as a default rule in most jurisdictions in the United States. Of course, C and the outside firms with which it contracts also have the power, subject to the same caveats, to make their own law to govern their exchange; this power is granted by contract law.

Turn now to the second question of forum. Suppose two persons A and B, employees or subsidiaries of C, have a dispute arising under C's internal rules. As the employment contract usually delegates authority to the firm, the state courts will not resolve this dispute (unless the dispute implicates some statutory right of the employee). Nor would the parent corporation usually allow its subsidiaries to resort to the courts to resolve an internal dispute.

Now consider two unincorporated divisions D and D' of C. Neither D nor D' is a legal

or labor law.

[10]Contract law provides the parties with great latitude in structuring their relationship but other parts of state law do constrain the substantive rights. The Thirteenth Amendment to the Constitution of the United States bans slavery, for instance. More relevantly, U.S. law includes statutes that require equal treatment by race, gender, age, and disability as well as restrictions on minimum wages and various terms and conditions of employment.

person for purposes of state law. However, even if they have engaged in an exchange with an "outsider" that constitutes a contract, neither D nor D' has the power to sue or be sued with respect to such a claim. To be concrete, suppose Chevrolet and Pontiac, both unincorporated subdivisions of General Motors, jointly hire an advertising firm; the agreement between Chevrolet and Pontiac provides a formula for allocating the costs incurred by the advertising firm. Any dispute between Chevrolet and Pontiac must be resolved within General Motors. (If Chevrolet and Pontiac were corporate subsidiaries of General Motors, each with a distinct legal identity, then each would have the right to sue or be sued. General Motors, however, might prohibit its subsidiaries from exercising this right.) One may view many of the contributions to this handbook (for exampleHansmann (2011)) as reviews of the internal procedures and policies that firms use to govern internal disputes.

2.2 The Law of Contract

2.2.1 Defining the Basic Concepts

A contract, in the legal literature, is "an agreement between two or more parties creating obligations that are enforceable or otherwise recognizable at law."[11] The economic literature, by contrast, provides no definition of a contract.[12] To the economist, "contract" refers to an incentive structure, often an optimal or constrained optimal incentive structure.[13]

Fruitful interchange between the two literatures thus requires that we specify at the outset a common vocabulary that permits the introduction of a legal framework into the economic analysis of "contract". We introduce four concepts: *an exchange environment, a*

[11]Black's Law Dictionary. The Restatement Second of Contracts, section 1, offers a similar definition: a promise or set of promises for the breach of which the law gives a remedy or the performance of which the law in some way recognizes as a duty". On this issue specifically, and on contract law generally, see Farnsworth (1999).

Different legal systems have different criteria for determining the set of agreements that the law will enforce. In common law jurisdictions such as the United States and Britain, these constraints are few. The agreement must be sufficiently detailed for the court to determine the content of the bargain; in most cases an agreement that required the transfer of goods at some future date without specifying the quality or quantity of the goods or the price at transfer would be unenforceable. In addition, for a promise to perform a future action to constitute an agreement, the promisee must give "consideration" but almost any return promise or action is now understood as consideration. See generally Farnsworth (1999) sections 2.2 -2.4. Note also that some agreements must be in writing to be enforceable.

[12]The index to Bolton and Dewatripont (2005) has no entry for contract law and the text provides no formal definition. The index to Salanie (1997) does have an entry "contract, definition of" but the designated page does not provide a clear definition.

[13]Salanie's discussion in his introduction is consistent with this interpretation. Ayres and Gertner (1992) characterize the economic literature in a similar fashion.

contractual instrument, contract law and *contractual behavior*. We will then offer a definition of a *contract.*

An exchange environment is specified by the preferences of the agents, the information structure among the agents and any third party enforcer, and the production technology that determines the effects of various investments by the parties on the costs and benefits of exchange. The exchange environment identifies the constraints under which the agents act.

A contractual instrument contains the terms the parties bargained for; while contract law may imply terms that the parties have neglected to make explicit, interpret terms that, in the light of performance, are ambiguous, or, more rarely, impose a term contrary to the one negotiated by the parties; further, the remedial rules of contract law largely determines the structure of any renegotiation. Contractual behavior refers to the actions of parties to the contract in light of the contractual instrument and the prevailing law of contract. We reserve the term "contract" for the set of obligations that result from the application of contract law to the contractual instrument.

We may think of a contractual instrument as a (partial) list of events and associated obligations for each party. Though the law usually enforces oral agreements, we assume that the agreement has a written form. Thus, a contractual instrument is embodied in a fixed text that is publicly available so that the parties and any third party enforcer know the contents of this text. The contractual instrument in conjunction with contract law determine the contractual obligations the parties have. We might say, that is, that the contractual instrument as understood against the background law of contract determines the *contract* between the parties. This contract is, in the sense of Arrow and Debreu, a complete contingent claims contract; it specifies what each party must do in every possible state of the world though, of course, the specified actions may not be optimal ones.

This essay begins to disentangle the role of the contractual instrument from the role of contract law in the structure of mechanisms. We also specify the constraints that contract law imposes on mechanism design by articulating some of the real features of contract law.

2.2.1 What does contract law do?

One ambiguity remains in our vocabulary. Contract law refers both to the substantive rules governing contracting behavior and to the institutions that interpret and enforce them. Substantive contract law identifies what private parties must do to create a legally binding agreement and guides the courts in the interpretation and enforcement of contractual instruments. In this essay, we focus on two institutional aspect of contract law that charac-

terize the tasks of courts and on a subset of the substantive law of contract. In effect, the court performs three distinct tasks when it adjudicates a contract dispute. First, it finds the facts. It determines what actions the parties took and what state of the world or nature was realized. Second, it interprets the contractual instrument. Interpretation requires the court to determine what obligations the contractual instrument imposed in the realized state of the world.[14] If the contractual instrument was complete, coherent, and uncontradictory, some term specified these obligations. If the contractual instrument was incomplete, the contractual instrument will not have specified any obligations in the realized state of the world. In this case, the court must nonetheless determine the obligations of the parties. In other instances, the contractual instrument may be poorly drafted and impose conflicting or ambiguous obligations in some state of the world.[15]Again, the court must determine what obligations the parties actually have. Third, if the court determines that one or more parties has failed to meet its obligations under the contractual instrument, as interpreted by the court, it must enforce the contract; the court imposes the remedy dictated by the substantive law.[16] Remedies may take many forms. The substantive rules of contract law determine the form of the remedy.

This discussion of the functions of courts suggests that we assess regimes of contract law along three different axes – the process of fact determination, the interpretative practice, and the substantive remedial regime.

2.2.2 Fact Finding

A contractual instrument specifies, against the legal backdrop, the obligations of each party. Often the obligations of the parties are state-contingent; what each party must do varies with the state of the world. Resolution of every contract dispute thus requires determination of the actions that each party took and of the realized event.

Fact-finding procedures apply across a wide of range of types of disputes and they are governed by distinct bodies of law (that generally go under the names of civil or criminal

[14]Of course, the content of the contract instrument and the substance of contract law determine in part what facts the court must find.

[15]A poorly drafted contractual instrument might, in one or more contingencies, also specify an inefficient or otherwise inappropriate obligation. Some poorly drafted contracts impose in some events inconsistent obligations on a party. I.e., it requires the party both to do and not to do some act A.

[16]"Impose a remedy" here means announce a judgment for the plaintiff/promisee that specifies an amount of damages to be paid or an action to be taken by the defendant/promisor. If the defendant does not satisfy the judgment, the plaintiff must return to court for an order to direct the sheriff to seize assets sufficient to satisfy the damage award or to seize the defendant as in contempt of court. Thus, strictly speaking, the sheriff, not the court, enforces remedies.

procedure and evidence). We may assess these procedures along two dimensions: their accuracy and their cost. In an ideal world, fact-finding would be perfectly accurate and costless. In the real world, the invocation of courts is costly and courts themselves sometimes err in their fact finding.[17]

As we discuss below, the economic theory of contract generally distinguishes observable actions from verifiable actions. Courts costlessly observe verifiable actions with perfect accuracy; courts cannot observe unverifiable actions at any cost.[18] Most actions and events, by contrast, are only verifiable at some cost and to some degree of accuracy.

2.2.3 Interpretive Practices

Contract disputes often entail more than a dispute over facts. They often include disputes over the content of the contractual obligations the parties faced. A party's obligations may be unclear for several reasons: the contractual instrument may have been ambiguous so that it is unclear whether an action a satisfies the contractually specified obligation or not; the contractual instrument may have been inconsistent and required that the party undertake an action that was not feasible in the realized state of the world or that the party undertake inconsistent actions; or the contractual instrument may not have contemplated the realized state of the world and so specified no obligation at all. Finally, contract law itself may have been unclear or ambiguous.

Contract interpretation is the legal practice that determines the obligations of the parties. These practices are complex and difficult to specify. To begin, we consider a procedural aspect of interpretive practices: the information on which the court relies in deciding what obligations the parties have under the contractual instrument.[19] The practice may be more or less inclusive in its informational base. It might refer only to the fixed text of the contractual instrument or it might rely on additional information. It might for instance rely on statements during the pre-contractual negotiations of the parties. It might rely on the pre-contractual practice (if any) of the parties – i.e., it might look to prior behavior of the parties under contractual instruments dealing with the same or similar subject matter. The court might look to the course of dealing of the parties under the contractual instrument in dispute. Alternatively, the court might look to general trade practice; that is, the court might consider how individuals who regularly engage in exchange of the type governed by

[17] We note in passing that the parties may, in the contractual instrument, alter the usual, default fact-finding procedures.

[18] The economic literature treats unverifiable actions as a constraint on the contractual instrument.

[19] Katz (2004) discusses this issue.

the disputed contractual instrument behaved under similar circumstances. We distinguish textualist practices of interpretation in which the court refers only to the written text of the contractual instrument from contextualist practices of interpretation in which the court refers to some information external to the contractual instrument as well as the text. This simple distinction is sufficient to classify the existing literature, discussed in section 4.2 below, and which has been inattentive to the problem of interpretation.

Of course, even courts that adopt identical informational bases might have different interpretive practices. After all, an interpretive practice is a map from the space defined by the informational base into the set of obligations. Court C might impute one obligation to a given set of "facts" while court C' imputes a distinct obligation to the same set of "facts."

We may better understand these imputation practices by considering the different objectives a court might pursue in interpreting the relevant informational base. The court might pursue at least three different objectives. It might seek to determine what the parties agreed to (or, if they did not contemplate the realized event, would have agreed to). To accomplish this aim, a court must recover both the interests of the parties and their relative bargaining power.[20] Alternatively, the court might seek to determine what "normal" or "average" parties to exchanges of this type would agree to. To accomplish this aim, the court must determine the preferences of the "normal" contracting parties. Third, the court might seek to determine an "efficient" contract. Efficiency here might refer to *ex ante* incentives to invest or it might refer to efficient risk sharing. Again the court needs to recover or to impute the preferences of the parties.

In the stylized world of the economics of contract literature, the parties are rational; they would themselves thus write an efficient contract. It might thus appear that the third interpretive aim simply recapitulates either of the prior two aims. This appearance however is deceptive for two reasons. First, though rational parties would seek to maximize their surplus, they might divide that surplus in many different ways. Hence, the first two aims require the court to infer the nature of a specific bargain.

Second, the contractual instruments of rational parties are thus clear and well-specified. In the commercial world, however, parties are not fully rational; they may make mistakes. Consequently, contract terms may be vague, unclear or contradictory (in the sense of requiring a party to take inconsistent actions in some state of the world. The court, in interpreting the contractual instrument, must confront these imperfections and determine what obligations the parties in fact had under the contract.

[20]In fact, the court needs a complete theory of how the parties would bargain.

2.2.4 Remedial Regimes

After the court determines what happened and what obligations the parties had under the contractual instrument, it determines whether each party met its obligations under the contractual instrument (as interpreted under the prevailing contract law). If the court finds that some party did not perform as required, it offers a remedy. Again, contract law has a rich set of remedial rules. We might understand a remedial regime as giving the promisor an option: to perform or not to perform but to make a damage payment. Remedial regimes differ in the option price, or the level of damages that the promisor must pay in the event of non-performance. We contrast two remedial regimes: (expectation) damages and no damages (against a backdrop of secure property rights).[21]

The standard remedy[22] for breach of contract in common law jurisdictions is expectation damages.[23] The principle of expectations damages awards the promisee her (subjective) value of performance. Of course, the court generally cannot observe this subjective valuation; the common law has developed a number of clever rules to implement the principle that, in many cases, contrive to deliver to the promisee her subjective value of performance without actually measuring it.[24] In many cases, however, the actual measure of promisee's expectation leads to undercompensation. This undercompensation results in part from the procedural rule in the United States that each party bears her own costs of litigation. This practice contrasts with the practice in Britain where the losing party bears the winner's costs of litigation as well as paying substantive damages.

Expectation damages nevertheless applies to most agreements. It differs dramatically

[21] Hermalin et al. (2006) surveys the economic literature on contractual remedies.

[22] Two types of deviations may occur. In some cases, lesser damages may be imposed and in some cases, specific performance, discussed in note below, may be imposed. In addition, the remedial rules of contract law are, to a certain extent, default rules. The parties may specify a level of damages in the contractual instrument that would substitute for the court measurement.

[23] In civil law countries, there is a large group of contracts for which the default remedy is specific performance, a requirement that the non-performing party meet her obligation. This requirement might be enforced by charging the breaching party with civil contempt which, in common law countries, might lead to jail time, or to large fines.

[24] Consider, for example, the rule of "cover" which permits an aggrieved buyer to purchase the contracted-for goods on the spot market and to receive as damages the difference between the market price at which she covered and the contract price. This rule delivers the promisee her expectation by delivering her the goods at the contract price (on the assumption that the contracted-for goods were standardized goods available in a sufficiently "thick" spot market).

Notice that, generally, the law may offer a number of different remedial options from which the aggrieved party may choose. Section 7 of Article 2 of the Uniform Commercial Code illustrates both the panoply of options and the elective nature well. In addition, an aggrieved party might rely on either restitution or promissory estoppel rather than pure contract remedies.

from the common assumption in the economics of contract literature that the obligation specified in the contractual instrument will be enforced. The rule of expectation damages will lead to radically different consequences than the rule of perfect enforcement assumed in the economics of contract literature.[25]

Finally, the law may simply protect the property rights of the parties and not enforce any agreements at all. In this regime, the parties have no access to the fact-finding or interpretive capacities of courts. Courts do, however, protect persons against bodily harm and property from appropriation by other individuals (and the government). When a promisor fails to perform, the promisee can enforce the contract only through reputational devices or refusals to deal. This regime corresponds to a regime of pure "relational" contracts.

2.2.5 Concluding remarks

These brief comments suggest a rich panoply of regimes of contract law against which exchange might occur. We consider a few ideal types, all against a backdrop of security of property rights. At the extremes are anarchy and utopia, the two regimes commonly assumed in the economics of contract. Under anarchy, there is no third-party fact-finding, interpretation, or enforcement though each party remains secure in her property holdings. Under utopia, fact-finding is perfectly accurate and costless, interpretation is clear and costless, and enforcement is costless and perfect (in the sense that each party performs her stated obligation). In the world of anarchy, contracts must be self-enforcing; in utopia, the parties can costlessly bind themselves to any obligation they choose.

Courts, however, decide cases in neither an anarchic nor an utopian world but in a world in which fact-finding, interpretation and enforcement are both costly and error-ridden. Contracts here need not be self-enforcing but they will not be perfectly enforced. Observed contracts reflect this middle ground (as well as the oddities that result from the efforts of boundedly rational or irrational agents).[26]

[25] As noted above, courts applied the remedy of specific performance to contracts for "unique" goods. One might, however, understand the rule of specific performance as an instance (or implementation) of the expectation principle as, by delivering the contracted-for performance, delivers the promisee her expectation. At will employment, by contrast, does not deliver the value of the performance to the agent.

[26] We have ignored some complications that arise when parties are insolvent. Our discussion thus far has assumed that the promisor is fully solvent; it can meet all claims on it. Under this assumption, the promisee understands that the promisor will either perform or pay damages as measured by the contract rule. In many actual transactions, however, and in some models, the promisor is potentially insolvent. Insolvency triggers a shift in the set of legal rules that govern disputes over contracts. Fried (1996) sets out the rules governing contracts in bankruptcy. He argues that the rules provide the trustee in bankruptcy with incentives to reject some contracts with expected gains from trade.

3 Enforcement and Remedy in Economic Models of Contract

In this section, we examine the enforcement assumptions implicit in the economic literature on contract. Economic analyses of contract usually make one of three assumptions. The literature on relational contracts assumes that the parties have no remedies available to them, other than the enforcement of unconditional monetary transfers. The agency literature assumes, consistent, with the substantive legal regime, that an aggrieved party will receive compensation equal to her expectation from the contract. The incomplete contracts literature, by contrast, assumes than an aggrieved party will receive specific performance; i.e that the courts will enforce all terms in the contract as written. As we discuss in more detail below, specific performance is not the general remedial rule in Anglo-American common law systems, and hence several of the contract forms that have been suggested as efficient solutions to the hold-up problems could not be implemented in the United States.

It is worth pointing out that in economics, the only role that damages play is to ensure that individuals choose to perform their obligations. Kornhauser (1983) observes that contract damages can play a second role, namely to encourage careful planning by parties. However, this point requires a theory of endogenously incomplete contracts, a relatively new literature. This is discussed further in section 4.

In section 3.1 we consider relational contracts. Section 3.2 discusses the general question of remedy. Section 3.3 considers expectation damages. These are damages that require the harmed party to pay the plaintiff an amount equal in value to the loss suffered by the breach. Section 3.4 examines liquidated damages. In these clauses, the contracting parties specify

Consider a contract at time t_0 between a Seller S and a Buyer B for the delivery of one widget at a price p at time t_2. Suppose S files for bankruptcy at time t_1; S is insolvent. If the contract was performed by both parties prior to $t_1$there is no problem. Suppose therefore that S has not performed by t_1. There are two possibilities: (a) B has fully performed prior to t_1 or (b) B has not fully performed by t_1(in which case the contract is executory). In situation (a), B is an unsecured creditor with no priority over any other unsecured creditors. Of course, Buyer may have taken a security interest in some asset of S's; then Buyer would have a prior claim on that asset. In principle, an economic analysis of contracting must now ask under what circumstances would we expect to see either party take a security interest in some asset? Turn now to situation (b). S faces a choice. She may either assume the contract or reject it. If she rejects the contract, then B is once again treated as an unsecured creditor of S. If S, however, assumes the contract, there are again two possibilities. S might perform the assumed contract in which case there is no problem; or S might later breach the contract. (At the time t_1 of the bankruptcy, the market price for widgets might be $p-2$; S therefore makes a profit by assuming the contract. At t_2, though, the market price may have risen to $p+2$ and S might do better if she breaches.) If S breaches subsequent to assumption of the contract, then B is an unsecured creditor of S but she now has priority over unsecured creditors whose debts were incurred prior to bankruptcy.

their own remedial regime. Section 3.5 discusses the remedy of specific performance. Section 3.6 compares expectation damages and specific performance. Section 3.7 provides a brief summary.

3.1 Relational Contracts and the absence of a remedial regime

Relational contracts use the threat to terminate a relationship as a contract enforcement device.[27] The literature here has antecedents in both the legal and the economic literature. In a classic study in the sociology of law, Macaulay (1963) observed that many business relationships appear to work well, even though they have no formal contract, or the contractual instrument they have is extremely unclear or inconsistent.[28] The evidence in Macaulay (1963) suggests that parties performed because of the expectation of future business rather than because of the threat of legal remedies.[29]

Simon (1951)'s classic paper on employment contracts initiated the economic literature on relational contracts. Simon was not concerned with the enforceability of the contract, but how complexity can lead to one or the other contract form. Malcomson (1981) begins his analysis of the employment contract with the observation that the complexity of performance requirements makes it impossible to enforce performance standards.[30] This creates a problem of *ex post holdup* (MacLeod (2002)). Malcomson (1981) points out that legal enforcement of employment contracts is limited; the firm must pay an employment who arrives at work but the court will not generally assess the quality of the employee's labor. Hence, dismissal is the sole sanction available to the employer. This characterization is consistent with the common law rule of employment at will.[31]

These ideas have resulted in a large literature on "relational contracts" that builds on the hypothesis that courts cannot be relied upon to enforce sanctions conditional upon the performance of complex tasks. Employment-at-will is the common law default rule in the United States but not generally in other jurisdictions. Moreover, even in the United States the law has evolved a number of exceptions to at-will employment that allow employees to seek damages from employers (Miles (2000)). Though some recent literature explores the

[27]Malcomson (2011) and MacLeod (2007) for detailed reviews of the literature on relational contracts.

[28]This confusion can occur when buyer uses her own purchase order and seller uses his own invoice, each of which includes boilerplate terms. This practice leads to the famous "battle of the forms" problem in contract law. See 3.21 in Farnsworth (1999).

[29]See also Posner (1997) for a discussion of the role of *norms,* and how they may shape behavior in contractual relationships

[30]Page 852.

[31]See Feinman (1978) for a history of evolution of the doctrine of employment at will.

role of employment protection in labor market performance (MacLeod (2010)), for the most part, the economics literature equates employment law with a turnover tax.[32] As we observe above, one of the important roles of the courts is its fact finding function, and hence equating employment law with a turnover tax is a rather crude representation of the legal system.

The formal analysis of relational contracts begins with Telser (1980), who introduced the idea that a relational contract can be modeled as a repeated game. He shows that if both parties have sufficient gains from trade, then they will both perform when the consequence of non-performance is a cessation of trade. His model assumes that both parties might breach the contract, and that this event is observable by both parties. Though Telser does not use all the formalism of repeated game theory, his analysis is consistent with the characterizations of the equilibria of repeated games in Abreu (1988).

Abreu (1988) shows that one can characterize all equilibria in a repeated game with a two step procedure. First, parties agree upon the equilibrium action in each period. In the context of a contract, this stage can be viewed as specifying the performance obligations. Next, Abreu shows that this "agreement" can be the outcome of playing a sub-game perfect equilibrium if, in every period, parties cannot gain by not performing, and then playing the *worst* subgame perfect equilibrium for the cheater. In other words, when breach occurs, the non-performing party faces the worst equilibrium possible under the rules of the game.

In this framework, the efficiency of an agreement is constrained by the size of the possible punishment. The folk theorem formalized the idea that, as the frequency of interaction increases, eventually the gain from cheating is less than the cost, and hence an efficient agreement can be reached. In this theory, the discount rate between periods represents the frequency of interaction. In this class of models increasing the discount rate is equivalent to holding the volume of trade constant per period, and having more transactions of smaller value within a single period. In that case, the cost of cheating does not change, but the since the value of each individuals transactions is smaller, the gain from breach falls.

A crucial assumption is breach can be perfectly observed. One might wonder whether the set of feasible allocations depends upon the allocation of the cost of cheating between the two parties. MacLeod and Malcomson (1989) showed that only the total gains from future trade affect the set of feasible allocations. By carefully designing the breach obligation, combined with a bonus payment by the buyer to the seller at the end of each period, parties can choose any allocation of the surplus.

[32]Blanchard and Tirole (2008) provide a nice analysis of employment policy for the purposes of informing French public policy. They they explicitly explore the role of employment insurance, and view employment protection as mainly a turnover cost. The fact finding role of the courts is not discussed at all.

When performance is not perfectly observable, the problem is much more complex. It may no longer be optimal for one party always to perform. Consequently, it is no longer optimal for the breaching party to face the maximal penalty. The modern theory of relational contracts explores the interplay between uncertainty regarding the breach obligation, and the possible punishments available in a relationship. In summary, the main technical difference between the theory of damages under relational contracts and damages under contractual instruments in the shadow of the law is that the maximal punishment under a relational contract is limited by the potential gains from future trade. The insights of the contract design and damages literature also apply to relational contract whenever the gains from trade are sufficiently large.

Before proceeding to our discussion of damages, it is worth while discussing two papers that are often cited as examples of relational contracting, namely Klein and Leffler (1981) and Shapiro and Stiglitz (1984). These papers do not explicitly address the question of what is an optimal contract. Rather they begin with an observed contract form, and then ask what are the market implications if parties restrict themselves to this contractual instrument. In the case of Klein and Leffer (1981) they consider the simple sales contract: seller sells a good at a fixed price. They then suppose that product quality is potentially imperfect, and that the market can observe product quality in the past. They then explore the consequences for a competitive market when buyers shun sellers who have produced low quality in the past. They show that this shunning strategy implies that high quality sellers will have brand names with positive rents associated with them. Sellers will choose not to supply low quality for fear of losing the return on their brand name.

Shapiro and Stiglitz (1984) assume that firms offer fixed wage contracts, but have the ability to dismiss workers at will. When there is uncertainty regarding worker performance, or a delay in observing performance, then under such a contract employed workers must earn higher utility than newly unemployed workers (and hence there is involuntary unemployment). As MacLeod and Malcomson (1989) show, involuntary unemployment follows from the assumption on contract form, and not from the assumption of costly monitoring (see Carmichael (1989) for an excellent discussion of the issues). These papers illustrate an important branch of the literature that explores the properties of observed contractual instruments, and how features of the contractual instrument (mainly the price) vary with characteristics of the environment (see the chapter by Lafontaine and Slade (2011)). For the most part, it is still an open empirical question why some contract forms are chosen rather than others.

3.2 Remedy Generally

Courts do not automatically enforce contracts, rather the party harmed by non-performance invokes the court. As such, legal enforcement is more properly viewed as providing parties with a set of decision rights. This idea has it origin in *Aghion and Bolton (1992).* They observe that bankruptcy can be viewed as a situation in which the control rights to a firm moves from the owners to the debt holders. Similarly, MacLeod (2007) observes that contract breach can be viewed as providing the harmed party the right to seek damages in a court of law.

Contract law determines the remedy available to an aggrieved party; the parties, through the contract design, assign the right to invoke the court for non-performance. We can illustrate the problem with a version of the simple buyer-seller example. We also use this example to discuss remedies for contract breach.

Consider a buyer-seller relationship where the seller chooses a level of effort/quality $q > 0$ that determines the probability $\lambda(q, E)$ that there has been performance as a function of q, and possibly other events E that occur after q is chosen. Let B_P be the *ex ante* benefit from performance, and B_B the *ex ante* benefit if there is breach, and $c(q)$ the cost to the seller of performing ($c(0) = 0, c', c'' > 0$). Given a price p, the payoffs to the buyer and seller are:

$$\begin{aligned} U_B(q) &= B_P\lambda(q, E) + B_B(1 - \lambda(q, E)) - r_B - p, \\ U_S(q) &= p - c(q) - r_S. \end{aligned}$$

The terms $r_S, r_B \geq 0$ are the reliance expenditures made by the buyer and seller after the after the contractual instrument has been signed, but before trade and production. These investments provide a motivation for writing a contract, as formally modeled by Grout (1984) and Hart and Moore (1988).

In addition to protecting investments, the contract must also provide appropriate incentives for the seller to choose the efficient level of effort or output, q^*, given by:

$$(B_P - B_B)\,\lambda'(q^*, E) = c'\,(q^*)\,. \tag{1}$$

Suppose that the buyer cannot directly observe effort q, in which case we have a model that is technically identical to a principal agent model with risk neutral agents, and hence, from a contract theory perspective, trivial. We suppose that it is efficient to trade, and hence any

state contingent price is of the form:

$$p_s = B_s - R,\ s \in \{P, B\}$$

effectively shifts all the risk to the seller, and thus induces the seller to choose the efficient level of effort. The term R is the rent that the buyer obtains from the relationship. It would be set as a function of the relative *ex ante* bargaining power of the two parties.[33]

This contractual instrument is not a legal document – it merely specifies the transfers as a function of S's decision to perform. It supposes either a costless legal system, or a world where individuals do not breach their obligations. In practice, this agreement could be implemented in a number of ways. Consider, for example, two contractual instruments that could govern a simple exchange. The first instrument is denoted by p^A. It defines the price that a buyer pays in advance in exchange for a promise by the seller to deliver a good that conforms to the contract specifications. The second contractual instrument, p^P, is the price that the buyer promises to pay the seller upon delivery of a conforming good. Notice that neither contractual instrument is complete in the sense that neither specifies what will happen in the event of breach. Nevertheless, these contractual instruments are very common in practice, and courts are expected to be able to adjudicate the disputes that arise in these cases.

Notice that, though these are very simple contractual instruments, they have quite different properties when viewed as contractual instruments. In the case of instrument p^A, the buyer has paid, and hence the performance obligation rests in the hands of the seller. If she does not perform, then the buyer must sue and must take care to collect evidence regarding the seller's performance. Thus, it is the buyer who must make the investment to sue. If the seller can be shown not to perform, then the courts must determine the appropriate damages.

In the case of instrument p^P the situation is reversed. In this case, once the seller has performed, the buyer must perform her promise to pay. If not, then the seller would have to sue the buyer to collect the amount due. Note that, in the second case, once performance has been verified, then the question of damages is straightforward – the buyer is obliged to pay the amount agreed upon, plus possibly any expenses arising from the delay in payment. We will use these two generic contractual instruments to discuss the various remedies for breach of contract that have been proposed by the literature.

[33]Under this contract we have: $U_B = R - r_B$ and $U_S = B_P\lambda(q, E) + B_B(1 - \lambda(q, E)) - R - r_S - c(q)$.

3.3 Expectation Damages

The rule of expectation damages attempts to measure the loss arising from breach of contract. In the case of contractual instrument p^B, if the buyer does not pay, the loss to the seller is p^B, and hence, expectation damages provides the same remedy as specific performance. In the case of contract p^A, if the seller performs, the buyer obtains a return B_P, and a return of B_B if there is breach. The loss due to breach would be $D = B_P - B_B$. As we can see from 1, this rule ensures that the seller has an incentive to choose effort efficiently. Crocker and Masten (1988) provides some evidence that in the case of long term gas contracts parties prefer expectation damages as a way of ensuring efficient *ex post* adaptation to changing conditions.

The rule also provides an incentive for efficient matching. For example, suppose that the seller has another buyer of a good for whom the value is $B' > B_P$. If the seller breaches, she would have to pay the buyer B_P, but sell the good for B', for a gain for $B' - B_P$. Thus she would breach whenever it is efficient to do so.[34] However, as Schwartz (1979) observes, this well-known argument does not necessarily imply that specific performance is inefficient. In the absence of transactions costs, the seller could always renegotiate the contract to share some of the gains from breach with the buyer.[35] In practice this argument is problematic because parties are unlikely to be truthful regarding their valuations, and hence such renegotiation is not likely to be efficient. Myerson and Satterthwaite (1983) have shown that even in the context of a simple exchange for a single good, if parties have private information regarding their valuations and fully rational, then is *impossible* to obtain efficient trade in all cases. Ayres and Talley (1995) build upon this result to show how liability rules should be chosen to enhance the efficiency of contract renegotiation.

The early literature on legal damage rules (Shavell (1980) and Rogerson (1984)) observes that even though expectation damages result in efficient breach, it may not provide appropriate incentives for relationship-specific investments. These papers are the beginning of a significant economics literature that compares the impact of remedies upon the efficiency of a contractual instrument. This literature used the categorization of remedies by Fuller and Perdue (1936). In that classic work they review the existing law and suggest that observed remedies can be categorized into three types:

1. Value that the harmed party expected to obtain from the contract or expectation

[34] See Hermalin et al. (2006), section 5.2 for discussion of this well known result as well as a more comprehensive review of the literature on expectation damages, and related measures of damages.

[35] Alternatively, the second buyer could purchase from the original buyer.

damages in both the legal and economic literatures.

2. The harmed party's reliance upon the contract, generally measured by the specific investment r. The economics literature terms these "reliance damages."

3. Specific performance according to which the promisor is ordered to perform the obligation.

The economics literature has accepted these three categories as the prototype representation of U.S. contract law. We have a series of papers, including Chung (1991), Spier and Whinston (1995), Edlin (1996), Edlin and Reichelstein (1996), Che and Chung (1999), and Schweizer (2006), that explore the relative efficiency of these three rules. This approach is convenient because it allows one to carefully compare these rules under a variety of conditions. Depending upon the environment, each of the damage rules may be efficient, but in general the rule of specific performance is typically found to the be the most efficient, consistent with prescriptions of legal scholars such as Schwartz (1979) and Ulen (1984). This raises the obvious question of why the courts do not use specific performance.

To begin, Craswell (2000) observes that the damage rules used in economic models are rather crude representation of the law. In the case of expectation damages the parties could have avoided court costs by specifying in advance the monetary damages for breach, a practice called liquidation damages. Moreover, a court cannot force the exchange of a good; we need to ask exactly how to implement the doctrine of specific performance. Given that the best the court can do is impose monetary penalties, why don't the parties avoid court costs by specifying such payments for all possible contingencies – in other words, why do they leave gaps in a contract? Finally, advance specification of the performance obligation is not the only choice available to parties. The parties might instead delegate *ex post* authority for certain decisions to one of the parties. How are such contracts enforced? In the next four subsections we address each of these concerns in turn.

3.4 Liquidated Damages

Under contractual instrument p^A the seller promises to perform, otherwise there is a breach of contract. If there is non-performance the buyer would sue the seller, and under the rule of expectation damages parties should expect a judgment equal to $B_P - B_B$. From equation 1, we see that this remedy provides first best effort incentives. Going to court to recover $B_P - B_B$ is an expensive exercise. If parties knew the outcome of a court case with certainty,

then the costs of litigation could be avoided with an out of court settlement, the typical outcome in practice.[36]

If the value of performance is private information, then from the Myerson and Satterthwaite (1983) theorem, it may not be possible to avoid conflict and a court case. The parties might adopt a number of solutions to this problem. First, the parties might specify *liquidated damages* – the amount that the seller should pay in the event of non-performance. These damages, specified in advance, provide a way for the buyer to signal to the seller her private valuation. In principle, liquidated damages reduce the uncertainty associated with a court case, and hence would increase the prospects for settlement.

In economics, liquidated damages is equivalent to a form of performance pay – the explicit linking of performance to compensation. However, these are two different contractual instruments. A liquidated damages clause substitutes the parties' measure of damages for the default judicial remedy of expectation damages. The clause direct the courts on the measure of damages *if* breach occurs – if the seller supplies either no goods or the non-conforming goods – and the buyer decides to litigate. In principle, the liquidated damages clause should govern but a clause must satisfy several conditions to be enforceable; consequently, the court has substantial discretion in the application of the clause. Indeed, the court will not enforce penalty clauses – a liquidated damages clause that sets the amount of compensation too high.[37]

In contrast, performance pay is a contractual obligation that leaves the court little discretion. If the seller supplies non-performing goods, that would not be a breach of contract as long at the seller also makes the agreed upon compensation to the buyer. In this case, breach of contract only occurs over promised transfers, a task for which the courts are generally competent. In economics, the principal-agent models rely exclusively upon contracts of this type. This class of models covers a large part of the economics of contract, and so it is worthwhile to discuss their enforceability.

Historically, principal-agent models build upon the theory of optimal risk bearing. Risk averse individuals who face diversifiable risks are expected to purchase insurance. An insurance contract specifies payments to be made when certain events occur.[38]

[36]See Spier (2006).

[37]To be enforceable a liquidated damages clause must be set at a level that approximates actual damage suffered and the amount of damages must be, at the time of formation of the contract, uncertain and hence difficult to anticipate. On liquidated damages generally see Institute (1981) section 375. Goetz and Scott (1977) also provide an introduction to the law.

[38]The genesis of the principal-agent model is Arrow (1963)'s observation that, in the case of health care, the government is in the best position to insure individuals against the costs of medical care in the event

Agency contracts are particularly applicable to the procurement of *services.* A physical good is one that can be delivered and inspected before the buyer accepts the good. However, for services, production and delivery are simultaneous, and hence third parties can never directly observe performance. Rather, one has *signals* of performance, which might include the amount of apples harvested, monthly sales, number of customer complaints, the amount by which students improve their test scores and so on. In each of these cases, the principal can link compensation to a measure of performance. Such contracts are also very common in employment. (MacLeod and Parent (1999) find that more than 25% of US workers are on some form of performance pay).

Holmström (1979) has shown that the optimal contract in a prototypical principal agent model entails making compensation vary with any useful measure of performance. The question then is whether such a contract is enforceable. In the case of commissions paid to sales person there has been some litigation regarding the question of whether firms can dismiss employees, and then not be required to pay commissions on sales that were completed while the individuals was an employee.[39] Many states in the United States have applied the doctrine of *good faith and fair dealing* to such cases to rule that the firm did indeed have an obligation to make good upon such promised payments. More generally, since agency contracts typically require the principal to make monetary payments as a function of well defined events that are observable by the courts, then we would conclude that these contracts are consistent with existing legal regime. We are sure that this conclusion is for our dear reader, as it was for us, a great relief given the importance of agency theory in modern economics.

3.5 Specific Performance

The economics literature generally assumes that contracts are enforceable in the sense that, if a party has an obligation a, then the party will in fact do a. In legal terms, the economics literature assumes that the default legal remedy is *specific performance.* The discussion in the last section has indicated that this assumption is generally false. The standard, common law remedy for breach of contract is expectation damages.

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of an accident. However, Pauly (1968) observed that this policy recommendation overlooks an important market incompleteness – namely these contracts do not control the level of care that individuals use to avoid risks. He argued that insurance contracts create *moral hazard* – insured individuals have less incentive to take precautions than uninsured persons. This observation spanned a large literature that today is called either *agency theory* or the *principal-agent problem.* See chapter 4 of Bolton and Dewatripont (2005).

[39]See Miles (2000) for a discussion of these doctrines, and the extent to which performance contracts are enforceable.

Consider first specific performance in the context of the sales contract given by p^P at which the buyer promises to pay p^P upon delivery of the good. If Seller delivers and Buyer fails to pay, specific performance merely requires the payment of a sum of money, a task that the courts are competent to do. Notice that the first best can be achieve with a price $p^P = B_P$ whenever $\lambda(q^*, E)p^P \geq c(q^*)$. Also notice that the remedy of expectation damages would provide the same outcome.

Now consider the contractual instrument p^A, where the seller promises to deliver a good after payment has been made. Suppose Seller fails to deliver or delivers a good that is not of the appropriate quality. What does specific performance mean in this case? If the contract merely called for the transfer of physical or real property, then the courts could competently enforce the transfer. In the case of real property they would simply order that a transfer has occurred, and have this put into public record. At that point the new owner would simply rely upon the Sheriff's office to enforce her ownership rights. In such cases the courts often use specific performance as a remedy.[40]

What does specific performance mean when the courts cannot directly control the actions of the seller? In these cases, the mechanism design literature, such as Aghion et al. (1994) and Edlin and Reichelstein (1996), observes that the enforcement of specific performance entails the (judicial) threat of penalties that are sufficiently large that the parties *choose* to perform as promised. [41] If it is the case that, at the effort q^*, one has $\lambda(q^*, E) = 1$, then any penalty greater than $U_S(q^*) - U_S(0) = c(q^*)$ would ensure performance. Notice that this is equivalent to a performance pay contract of the form:

$$P(q) = \begin{cases} p^*, & if\ q \geq q^*, \\ -C, & if\ q < q^*. \end{cases} \tag{2}$$

Under this contract, the seller pays a penalty $-C$ if performance is inadequate. Given that rewards are deterministic, the seller can always choose to avoid the penalty by choose q^*. Such a contract might make sense if the buyer wished to ensure performance for a wide variety of costs to the seller. In the absence of a penalty, the seller might choose to default. Such contracts are implicitly used in economic models where the goal is to implement a price-quantity pair where this is possibly some asymmetric information (such as in Maskin

[40]See Farnsworth (1999). If the prior owner does not vacate the premises, the Sheriff will, upon an appropriate order of the court, evict. Similarly, if a losing defendant in a contract action fails to pay the ordered expectation damages, the sheriff, upon an appropriate court order, levy and execute on the defendant's assets to satisfy the judgment.

[41]See Edlin and Reichelstein (1996), page 482.

and Riley (1984) or Laffont and Tirole (1986)).

As Edlin and Reichelstein (1996) observe, this rule is easy to implement in practice - the courts need only verify if performance occurred, and then impose a sufficiently large penalty if not. They then provide conditions under which specific performance can ensure efficient investment and trade, significantly extending the earlier results of Rogerson (1984) and Shavell (1984). The benefit of the rule is that it provides a method for enforcing effort revelation when the courts cannot observe relevant information, or when one party is credit constrained.

However, the *penalty doctrine* (see Farnsworth (1999)) directs courts not to enforce liquidated damage clauses that require payments, such as C in the contractual instrument given in (2), that are out of proportion to actual damages. This doctrine allows courts to reduce or waive liquidated damages.[42] This rule can be used to explain some features of observed contractual instruments. As an example, consider long-term contracts for inputs to a manufacturing process. Joskow (1988) describes in some detail the market for the supply of coal to electric utilities. If parties are risk neutral, then in principle they could agree to terms that might allow the contract price for coal to vary significantly from the spot price. An interesting feature of observed contract prices is that they closely follow the spot price for coal. This raises the question of why parties engage in costly contract design, rather than use the spot price? MacLeod and Malcomson (1993) provide a solution to this problem - if each party needs to make a relationship specific investment that affects their own payoffs, but not the other's (the so called self investment case), then it is efficient to have a fixed price contract. However, over time the price of coal can fluctuate a great deal. Parties could put into place large penalties to enforce trade at the contract price, but these may not be enforceable under the penalty doctrine. MacLeod and Malcomson (1993) show that if parties can index the contractual instruments so that it follows the market price, then it is unnecessary to put into place penalties for breach of contract, and moreover parties would still have the incentive to make efficient investments into relationship specific capital because their investments do not affect the price paid or received in the future. Edlin (1996) has another solution that may work in some circumstances. He shows that *Cadillac* contracts that call for very high performance can ensure efficient investment under the rule of expectation damages.

These results do not resolve the issue of why courts are reluctant to enforce penalty clauses. Thus there is an unresolved tension between the results of Aghion et al. (1994) and Edlin and Reichelstein (1996) showing that the doctrine of specific performance allows

[42]See Posner and Rosenfield (1977) for an early analysis of these issues.

for the implementation of efficient arrangements, while in practice courts are reluctant to enforce such contracts. One possible reason for this reluctance is that courts must adjudicate all disputes, including disputes involving poorly drafted and incomplete contracts. We now turn to this issue.

3.6 Specific Performance and Expectation Damages compared

Both Schwartz (1979) and Ulen (1984), distinguished legal scholars, have argued that the courts should use specific performance rather than expectation damages as the default remedial rule. In an important paper on mechanism design, Aghion et al. (1994) show in a model with holdup, that the rule of specific performance can ensure efficient investment and exchange. Schwartz and Scott (2003) reiterate this point in a law review. Indeed, the economics literature suggests that specific performance has superior efficiency properties than expectation damages.

This conclusion, however, may underestimate judicial and party ingenuity. Consider the case of construction contracts. The complexity of construction presents a particularly challenging environment to achieve first-best outcomes even with specific performance. Bajari and Tadelis (2001) introduce a simple and elegant way to formally introduce unforeseen events into a model of construction contracts. The idea is that the time and money spent drafting a contract can be viewed as *relationship specific investment* into the quality of the contractual instrument. Let I be the investment into planning, and let $\rho(I)$ be the probability that only foreseen events occur. It is assumed that $\rho' > 0$, and hence the quality of planning increases with I. With probability $1 - \rho(I)$ an unforeseen event occurs. They then compare two contract forms - fixed price and cost plus. Under a fixed price contract the seller is responsible for delivering an acceptable product at the agreed upon price. This implies that the seller receives all the returns from any cost saving actions.

In contrast, under a cost plus contract, the buyer pays all costs of production, thereby reducing the incentives to the seller of making unobserved cost-reducing investments. If all events are foreseeable, then the fixed price contract implements the first-best, while if no event is foreseeable, then the cost plus contract is more efficient. Thus, if the cost of planning are sufficiently low that unforeseen events occur with low probability, then a fixed price contract is optimal, and vice versa with respect to cost plus contracts. The model delivers a theory of contract form as a function of the complexity of the environment, as measured by the cost of planning.

Bajari and Tadelis (2001) assume, following the literature, that courts enforce agreement

with specific performance as given. Chakravarty and MacLeod (2009) build upon their model and explore how such contract are enforced. They begin with the structure of the American Institute of Architects form construction contracts.

This class of contractual instruments is interesting because they are widely used in the U.S. construction industry, and have evolved over 100 years in response to both experience in the field and the outcome of litigation involving construction disputes. Hence these contractual instruments are likely to satisfy the economists' assumption that the form of observed contractual instruments can be explained as an efficient to solution to the problem of implementing trade given transactions costs and the characteristics of the contracting parties. Chakravarty and MacLeod (2009) show that these contracts can indeed be viewed as efficient under the following conditions:

1. The buyer's design is costly in the sense of Bajari and Tadelis (2001).

2. The seller's investment in cost reduction is not observable, though realized costs are observable.

3. Buyer's preferences are private information, and they can change between the time of contract and project implementation.

4. Courts use expectation damages, but may excuse performance.

In practice construction must occur in the shadow of the law, and it is natural to ask if efficient trade is possible within existing law. The literature on mechanism design reviewed above suggests that specific performance may be a necessary ingredient for efficient trade. Chakravarty and MacLeod (2009) find that this is not the case – these contractual instruments are able to implement the efficient allocation with a generalized version of expectation damages:

$$Damages = Foreseeability \times Expectation,$$

where $Foreseeability$ is a number between 0 (unforeseen) and 1 (perfectly foreseen) representing the extent to which a lost is anticipated. If an event is unforeseeable, and/or impractical, then the law excuses the breaching party from performance. On the other hand, if the event is foreseen, then the rule of expectation damages applies. Both of these extremes are consistent with current law. The rule is more general because, when an event is only partially foreseeable, then damages should be reduced. This rule is implemented in the AIA forms by leaving the damages in some cases to be determined by mutual consent.

Thus, even within the economics of contract literature, the superiority of specific performance as a remedy remains an open question. The resolution of the debate over the appropriate default remedy will likely entail a better understanding of the interplay between the fact finding function of the courts, and the contractual environment. Notice, for example, that the rule of specific performance can lead to opportunistic behavior on the part of the seller. If the seller learns that the buyer has had an unfortunate event (say her plant burns down), the she can take advantage of the seller's low valuation b to threaten delivery under the contract in order to extract a larger damage payment. If one can anticipate such behavior, then the contract can be design to mitigate its costs. If b and c are private information, then as Myerson and Satterthwaite (1983) have shown, it is not possible to implement the *ex post* efficient allocation.

One of the messages of the literature on asymmetric information is that there are inevitably costs to revealing information. There is a growing literature that uses models of asymmetric information to understand the process of litigation.[43] This literature is not yet integrated into the literature on contract design. Hence, we conclude that, in general, contracts that vary with well defined performance measures are in general enforceable. However, contracts that entail large penalty payments, or rely upon specific performance on in general not enforceable.

3.7 Summary

The basic message of this section is that the economic theory of contract does not rely upon the complex institution that is contract law. For the standard principal agent problem this is without great loss of generality. Performance pay contracts are in general enforced. However, the more recent models that rely upon strong forms of specific investment are not in general consistent with existing law.

This make help explain the tension that exists between the property rights approach to the theory of the firm (Grossman and Hart (1986), Hart and Moore (1999) and Rajan and Zingales (1998)), and the mechanism design approach to contract (Moore (1992), Maskin and Tirole (1999), and Tirole (1999)). The former implicitly recognizes that contracts may be limited in their ability to allocate bargaining power, something that can be better achieved with ownership rights.

Parties to a contract are concerned with ensuring that they are able to rely upon the contract and thus make appropriate relationship specific investments. In addition, there is

[43] See Cooter and Rubinfeld (1989) and Spier (2006) for excellent reviews of the literature.

always an element of asymmetric information between parties and the courts that may also lead to transactions costs that may be reduced with the appropriate allocation of bargaining power. Rogerson (1992) has made some progress on integrating asymmetric information and holdup, but much work remains. In particular, the contract literature has not incorporated the fact finding activity of a court case into contract design. In this next section we discuss the literature that explores these activities in more detail.

4 Adjudication

Section 3 examined the shadow cast by the substantive remedial rules of contract law.[44]

This section examines the judicial role in dispute resolution. Resolution of a contract dispute requires a court to determine what obligations the parties have and whether any obligation has been breached. The first task requires the court to *interpret* the contractual instrument. The second task requires the court to determine what in fact happened. Phrased differently, contract disputes may arise for two distinct reasons. The parties may disagree about "what happened"; in economic terms, they disagree about the realized state of the world (including the actions undertaken by each party). Or the parties may disagree about the content of their obligations.

Disagreement about the state of the world may arise even when contractual instruments are complete. Disagreement about the obligations of the parties, by contrast, assumes either that the contractual instrument is incomplete or otherwise defective, perhaps ambiguous or inconsistent.

We organize our discussion into two parts. The first section examines the literature on fact finding. As virtually nothing has been written about the role of the court as a finder of

[44]We ignore here a substantial literature on the shadow cast by rule of bankruptcy. The law of bankruptcy looms when one party cannot afford to make a transfer required by a contract. In the case of agency theory, given that the state provides a complete description of the environment, this constraint is anticipated and incorporated into the design of the contractual instrument. (See Sappington (1983) and Innes (1990) for two early important contributions and Lewis and Sappington (1999) for a recent contribution and discussion of this literature.) The contract design ensures that, even in this case, there is no real role for the courts because the transfers are always feasible. The contract design must reflect this constraint. There is a vast literature in corporate finance that explores the consequence for contract design when parties face limited liability. (See Gale and Hellwig (1985), Doornik (2010) and Bolton and Dewatripont (2005) for a comprehensive review of this vast literature.) These papers can be viewed as contributing to our understanding of contracting in the shadow of the law, where the shadow is cast by the rule that limits penalties to the financial wealth of defendants. This limitation was not always the case. In the past debtors might be sent to prison or face other physical penalties. It is an open question why there has been an historical evolution toward limiting liability to one assets. See Hansmann (2011) in this volume for further discussion on the historical evolution of limits to financial liability.

facts in contract disputes, we review a related literature on fact-finding generally. The next section addresses interpretation.

4.1 Fact Finding

4.1.1 Fact Finding in the Economics of Incomplete Contracts

The economic literature on contract classifies facts into four classes: verifiable, jointly observable, observable by one party but not the other, and neither verifiable nor observable.[45] A verifiable fact is one that is known (or knowable) publicly, that is, to both parties and to any third party adjudicator. A jointly observable fact is known to both parties to the contract but is not publicly available. Obviously a fact that is observable by one party but not the other occurs in contractual environments with asymmetric information. Some facts, for example, the precise state of the world, may be not observable. The existence of observable but non-verifiable facts constrains parties in the drafting of contractual instruments (and courts in the imposition of contractual obligations). An obligation cannot be conditioned on a fact that is not verifiable.

This classification is very extreme. Either a fact is verifiable (generally at 0 cost) or it is not verifiable (at any cost). The situation in actual exchange environments is more nuanced. A fact may be more or less verifiable at greater or lesser cost. One might say that a "more verifiable" fact is one for which the court or other third party receives a more accurate signal. Moreover, courts can use burdens of proof and burdens of persuasion to influence the quality of signals that parties provide as well as distributing the consequences of erroneous signals.

Before considering the structure of judicial fact-finding, we note that much of the economic literature investigates the consequences of non-verifiability for the form of a contractual instrument. One might, for example, understand the entire principal-agent literature this way. Agent "effort" is not verifiable (nor observable to the principal); consequently, the parties require a contract that conditions the agent's wage on other verifiable facts.

4.1.2 Judicial Fact Finding

A contractual instrument specifies, against the legal backdrop, the obligations of each party. Often the obligations of the parties are state-contingent; what each party must do varies with the state of the world. Resolution of every contract dispute thus requires determination of the actions that each party took and of the realized event.

[45] A more complete account would include dates, when a fact is known to whom.

Fact-finding procedures apply across a wide of range of types of disputes and they are governed by distinct bodies of law (that generally go under the names of civil or criminal procedure and evidence).[46] We may assess these procedures along two dimensions: their accuracy and their cost. In an ideal world, fact-finding would be perfectly accurate and costless. In the real world, the invocation of courts is costly and courts themselves sometimes err in their fact finding.[47]

As we discuss below, the economic theory of contract generally distinguishes observable actions from verifiable actions. Courts costlessly observe verifiable actions with perfect accuracy; courts cannot observe unverifiable actions at any cost.[48] Most actions and events, by contrast, are only verifiable at some cost and to some degree of accuracy.

A few models – Milgrom and Roberts (1986), Dewatripont and Tirole (1999) and Shin (1998)–examine how accuracy varies with the fact-finding procedure. These models contrast adversarial procedures in which each party presents evidence favorable to itself with inquisitorial procedures in which a non-partisan agent gathers evidence. These models identify conditions under which adversarial procedures dominate inquisitorial ones.

These models require further elaboration to yield insights for an economic theory of contract. In Milgrom and Roberts, the parties are fully informed about the state of the world. In the legal context, by contrast, each party generally has only partial and asymmetric information about the state.

Both Shin and Dewatripont and Roberts address questions of imperfect and asymmetric information. Moreover, Shin's model addresses adjudication directly. From a legal perspective, however, these models are in a "reduced" form. Each assumes that the agents and the principal acquire information about the correct final decision that, in Shin, is dichotomous while, in Dewatripont and Tirole, is trichotomous. The decision in Shin thus corresponds to the disposition of an adjudication, i.e. the judgment that Plaintiff prevails or fails. The disposition in a contract dispute depends both on the state of the world and on the obligations imposed by the contract. These obligations, however, result from the process of interpretation, discussed in the next subsection.

Common law adjudicatory institutions reflect this structure. Facts in contract disputes in the United States are typically found by juries. Judges determine the law; that is, judges

[46]We ignore some evidentiary rules that are specific to contract law such as the statute of frauds which requires a writing to enforce certain classes of contracts. On the statute of frauds, see Farnsworth (1999) chapter 6

[47]We note in passing that the parties may, in the contractual instrument, alter the usual, default fact-finding procedures.

[48]The economic literature treats unverifiable actions as a constraint on the contractual instrument.

interpret the contractual instrument and determine the contractual obligations of the parties.

4.2 Contract Interpretation

Virtually all models in both the economics of contract and the economic analysis of contract law make two critical assumptions about contractual behavior. First, the models assume that contractual instruments are perfectly drafted: contractual instruments are clear and consistent on their face. Second, the models assume that parties to the contract have foresight and correctly anticipate the consequences of their actions, including those of the court. Neither assumption is warranted; contractual instruments are inevitably incomplete, unclear and often inconsistent. They require *interpretation*. Moreover, the practice of interpretation is not completely transparent. As Goetz and Scott (1980) observe, courts have a complex set of rules that often entail changing clearly specified performance obligations.

The economic theory of incomplete contracts does admit one important role for interpretation. When an uncontracted-for event occurs, a court must fill the gap in the incomplete contractual instrument. The court must specify the obligations of the parties to determine whether breach has occurred or not. The gap-filling ruling is often called a *default rule*.

Both the literature on incomplete contracts and the literature on the economic analysis of contract law have studied default rules from two complementary perspectives. In the incomplete contracts literature, this study has been implicit rather than explicit; it occurs in the analysis of the causes of the incompleteness of contractual instruments. The economic analysis of contract law, by contrast, has generally asked which default rules provide the optimal background against which parties should draft their incomplete contractual instruments. We discuss the choice of optimal default rules in the first subsection and the role of interpretation in contractual incompleteness in the second subsection.

Gap-filling, however, is not the sole purpose of interpretation. In the second subsection, we discuss the sparse literature that adopts a more general approach to interpretation. As noted in section 2.2, we can understand interpretation as a mapping from some set of interpretative materials that include the contractual instrument but may include other texts and actions into a set of contractual obligations for each possible event.

In economics, the dividing line between contract theory and other areas of the theory of organization such as corporate governance or human resource management, typically turns on the notion that courts merely enforce the terms of a written agreement. In contrast, corporate governance focuses upon the design of decision rights for officers of the corporation. In fact, a legally binding contractual instrument must explicitly deal with the allocation of

decision rights over the relationship. That is, parties to a legally binding agreement provide each other the right to take the other party to a court of law for the adjudication of the contractual instrument in the event of a breach. In the absence of courts, parties would have to rely upon other instruments to enforce an agreement, such as reputation effects, or threats to reduce trade in the future, or even possibly threats of violence, as discussed in MacLeod (2007).

4.2.1 What is Interpretation?

In the most basic sense, a contract is a complete list of terms k_θ that specify, for each state θ of the world, the obligation a_θ of each party: in state θ seller must undertake action s_θ and buyer must undertake action b_θ. A contractual instrument, by contrast, is a *partial* list of terms. The list of terms in a contractual instrument is partial in at least two senses. Most obviously, the instrument may not specify an obligation for every state of the world. In addition, a contractual instrument may not fully specify the obligations of each party even when it "covers" a state of the world. Interpretation is the process through which the court completes the contractual instrument to yield a contract.

The contractual instrument and its partial list of terms may present several different interpretive problems:

1. Missing terms: the realized state θ may not be on the partial list of states included in the contractual instrument.

2. Ambiguous terms: A contractual instrument may specify an agent's obligation ambiguously or it may specify the event ambiguously.

3. Inconsistent terms: there is an event E for which are two clauses k_i, k_j specify conflicting obligations. If event E occurs, it is not clear which action a_i or a_j should be carried out.

4. Impossible terms: a term imposes an obligation that is impossible to perform in the realized event even though that event is contemplated in the terms.

5. "Unwanted" terms: the contractual instrument may, in state θ, specify obligations that, when θ is realized, the parties dis-prefer to some other obligations.

Each of these defects present an interpretive problem for the court. As economic models typically assume, suppose that the model parties use an accurate representation of their

relationship, then these defects cannot occur. As a consequence, though there is a substantial amount of law arising from these three contractual defects, there is little economic analysis of these problems. We discuss each of these interpretive tasks in turn.

When the contractual instrument is missing a term, it is, in the most basic sense, "incomplete." The statement that "the *contract* is incomplete" is, by contrast, a rather crude and not particularly helpful statement. After all, a simple rule of interpretation assures that every contractual instrument is complete. Given any contractual instrument K, let E^c be the set of states for which there is no specified obligation. If an event $E \subset E^c$ occurs, then we can complete the contractual instrument by supposing that neither party has an obligation in this event. As one can always do this, one can always suppose, following Ayres and Gertner (1992), that contracts are *obligationally complete.* Hence, for each contractual instrument, either parties perform as specified in the agreement, or one party believes there is breach of contract, in which case she has the right to an adjudication.

Notice that, when $E \subset E^c$, a court could adopt a different rule to complete the contractual instrument. The court might, for instance, require each party to perform the obligations that are specified in some other other term k. Whatever specification the court implies is called a *default rule.* We discuss default rules in the next subsection.

A term may be ambiguous in two different ways. Typically, a term k in a contractual instrument does not address a single state θ. Rather it groups states into events E. Given ordinary language, however, it may be unclear whether some state θ is in E or not. Alternatively, the contractual instrument may have described the obligation of one of the parties ambiguously. The parties may describe a party's obligation in at least two different ways. Ideally, each term would specify a single obligation to the party; but, often, a contractual instrument gives the party discretion. They might provide a list of tasks that the agent may perform. Or the parties may describe a performance that the agent must accomplish. Suppose a contractual instrument simple states "Deliver the fresh fish by 3pm today to 230 Mercer Street, New York City." This instrument uses a performance to describe the action set; it does not list the multitude of ways that the agent might actually deliver the fish by 3 pm – by cart at 2:59, by bicycle at 2:58, etc.[49] The manner of specification may affect the interpretive task for the court. It may be uncear whether the action undertaken by the party falls within the description of the obligation.

A contractual instrument may also include inconsistent terms. For example, the contrac-

[49]Notice that these descriptions are incomplete. A complete description of the tasks would identify the route the deliveryman took and the type of cart or bicycle she might use.

tual instrument may specify that Seller supply 100 units when the price of wheat is less than \$5/bushel and 50 units when the price of corn is greater than \$4 per bushel. If the price of each is \$4.50 per bushel, is the Seller in compliance when she supplies 50 units? A court must resolve these inconsistencies.

Impossible terms are a particularly egregious example of an inconsistent term. This is a very common case for simple contractual instruments, such as an agreement to supply q at a price p. Events may make it impossible to supply q. In the well-known English case *Caldwell v. Taylor*, for example, Plaintiff had rented defendant's opera house for a performance on a given date; shortly before that date, the opera house burned down rendering performance of defendant's contractual obligation impossible.

When economists speak of incomplete contracts, they often mean contracts with unwanted terms: the parties have, for some state θ, specified obligations that are inefficient. There are some actions available to each party which would yield a higher total surplus to be divided among them.[50] The court must now decide whether to "reform" the contractual instrument and require the parties to undertake the efficient actions rather than those specified in the contractual instrument.

4.2.2 Default Rules

A default rule determines the obligations of the parties when an event occurs about which the contractual instrument is "silent." To reach this conclusion, of course, the court must first interpret the contractual instrument as not having addressed the realized event. Two questions arise: why is the contractual silent? How should the court specify the missing term?

At first thought, the silence of a contractual instrument is perplexing. Consider, for example, a paradigm supply example. Suppose a caterer contracts for the delivery of fresh fish to a location for an event in the afternoon, at a agreed upon price p. The contractual instrument is very simple; it requires the supplier to deliver by 3 pm, and emphasizes the importance of timely delivery because the fish is for an important event. Now, suppose the normally reliable supplier is involved in a traffic accident, and fails to deliver the fish which results in irreparable harm to the caterer's reputation for reliability.

The court must determine what damages, if any, should be assessed against the supplier for breaching the promise to deliver the fish. Our example presents a classic problem of

[50]This inefficiency might arise in two ways. The parties may simply have made a mistake and specified the wrong acts. Or the contract term may be overbroad; it specifies a uniform action for all states in some event E when efficiency requires that the action differ.

an incomplete contractual instrument. To an economist, the prevalence of these disputes is puzzling because the parties surely understand that accidents sometimes happen. The dispute does not arise from asymmetric information. As the accident was foreseen, why haven't the parties included terms in the agreement that cover such cases? A complete contractual instrument would have clauses that specify payments that would be made when there is non-performance. In this sub-section we review the various models that have been introduced to explain why contractual instruments are incomplete. In section 4 we discuss the role of the law in completing such incomplete contractual instruments.

Four reasons have been offered for the silence of contractual instruments. First, Goetz and Scott (1980) suggests that if breach is a very low probability event then parties may find that the *ex ante* cost of negotiating breach terms is greater than the benefit. In this case, they choose to delegate the damage decision to the court (see Shavell (1984) for a formalization of this argument). In these cases they would like to court to set damages equal to the amount they would have agreed upon *ex ante.* As we shall see in the next subsection, costs of drafting provide a general answer to the first question of silence and unwanted terms.

Second, contractual instruments may be *strategically* incomplete. Ayres and Gertner (1989), Aghion and Hermalin (1990) and Spier (1992) show that a buyer with asymmetric information about her own valuation may not include a term that specifies liquidated damages fearing that it will reveal how much he values the good. The seller could use this information to increase the price. Hermalin and Katz (1993) suggest that courts should allow parties to use "fill in the blank" contractual instruments to enhance performance.

Third, and related, Bernheim and Whinston (1998) show that that parties may choose to leave contractual instruments incomplete because this will increase the future gains from trade, and thus increase the set of outcomes that can be supported by a subgame perfect equilibria. This allows the parties to place more reliance upon the value of a future relationship for enforcement, and thereby avoid costly enforcement via a court. Scott (2003) provides some evidence from case law that is consistent with the results of Bernheim and Whinston (1998), namely parties do seem use contract incompleteness to enhance the set of feasible allocations. Baker et al. (1994) have what can be viewed as a countervailing result. Namely, they show that if one adds a legally binding agency instrument then this can increase the set of self-enforcing agreements. Using this idea, Schmidt and Schnitzer (1995) show that when one party breaches a relational contract, then, rather than separate, the parties might choose to use a contractual instrument that is enforceable in court. This would reduce the cost from breaching and thereby reduce the set of contracts enforceable with a relational

contract.

Finally, Bolton and Faure-Grimaud (2005) introduce an explicit planning model and work out how these costs give rise to the incompleteness of contractual instruments. Tirole (2009) interprets the cost of planning as a form of limited cognition, and then explores the consequence of planning costs/limited cognition upon contract design. He shows that, if one can hide one's information, then the introduction of limited cognition can lead to adverse selection, as in the model of Spier (1992).

The answer to the second question of the judical response to the silence of the contractual instrument is equally complex but less developed. The complexity arises because contractual parties will bargain in the shadow of the law. The content of the default rules will determine whether parties contract over specified events or leave the instrument silent. Change the default rule and one changes the content of a contractual instrument. Shavell (1984) shows that, in principle, courts can choose default rules that allow short contractual instruments to induce optimal contractual behavior.

In practice, the actual design of specific default rules is controversial. A prominent view is that courts should fill in gaps using so called "majoritarian defaults". Under a majoritarian default rule, the court supplies the term that the majority of individuals would prefer. Economic analysts of contract law justify this choice on the grounds that it minimizes drafting costs. (Goetz and Scott (1983)). Given that the majority of contracts are not litigated, it is not at all obvious that such a notion is well defined or knowable to contracting parties.

Even knowable, the determination of the optimal default rule *ex post* is challenging. Mechanism design theory reveals the inherent tension between *ex post* and *ex ante* efficiency. The implementation of *ex ante* efficient contracts often entails the use of actions that are sometimes *ex post* inefficient. If an event occurs that is not addressed in the contractual instrument, how does one tell if it is a foreseen event that parties have delegated to the courts to fill, or one that is unforeseen? If the event is unforeseen then, as Hart (1990) observes, the consequences upon reaching that state can have no effect upon *ex ante* decisions. In that case, the efficient rule is always to choose an *ex post* efficient allocation. As we have discussed above, a defining feature of *expectation damages* is that it is an attempt to achieve *ex post* efficiency. Hence, though the rule of expectation damages does not necessarily achieve *ex ante* efficiency, the fact that it approximates an *ex post* efficient allocation makes it an appropriate rule for unforeseen gaps in a contractual instrument.

Ayres and Gertner (1989, 1992) and Bebchuk and Shavell (1991) argued that, in con-

tractual environments with asymmetric information, courts should adopt a "penalty" default that induces the informed party to reveal her private information. These papers consider models with two types of buyers, and for which the optimal level of seller's investment is a function of the buyer's type. The buyer's type is assumed to be private information. The authors show that a default rule that "penalized" buyers with a high type would, under the appropriate circumstances, induce high type buyers to reveal their type. This model, however, failed to clearly distinguish penalty from majoritarian defaults. If low type buyers constituted a majority of the buyer population, then they would be indifferent between the two rules considered by the court.

4.2.3 Unwanted Terms

The economic literature on incomplete contracts has offered an explanation for the presence of unwanted terms. They may arise simply because of the complexity of the contractual environment. This complexity requires that the parties invest time and resources into the creation of a contractual instrument.

Defining exactly what one means by "complex" remains an open question, or, more precisely, there are many definitions of complexity that depend upon the context. The formal model of contract we describe above supposes that a contractual instrument is a collection of event-obligation pairs. Events are subsets of the state space, which even for very simple problems becomes astronomically large (see the discussions by Williamson (1975), chapter 2 and MacLeod (2002)). This implies that, even with small costs of adding clauses to a contractual instrument, contractual instruments are likely to be very incomplete. This idea is formalized in the work of Townsend (1979) and Dye (1985) in the context of a simple risk sharing contract. They show that the fixed costs of adding terms implies that there can be only a finite number of events specified in any contractual instrument. This finite number of terms classifies an infinite state space. Consequently, it "lumps" together a number of states. An ideal contract would require distinct acts for some of these states; the contractual instrument has produced an overbroad term that may require the "wrong" actions in some realization and the first best cannot be achieved.

Rather then endogenously fixing the cost of a adding an event, Anderlini and Felli (1994, 1999)Anderlini and Felli (1994) endogenize these costs with a model of computational complexity, and also show that the optimal contractual instrument trades off the cost of planning costs against contractual completeness. Battigalli and Maggi (2002) extend this work and discuss how contract complexity affects the choice between rigid and flexible contract terms.

In their model, the parties may be unable to specify the optimal action.

This literature derives results on contractual form by *assuming* an interpretive practice of the courts. Specifically, the literature assumes that a court will enforce the contractual instrument as written; it will not reform the instrument and substitute *ex post* the term that the parties would in fact want. Of course, courts may not adopt this interpretive practice. The next subsection suggests that this interpretive practice is in fact not optimal.

4.2.4 Interpretation Generally

The focus on default rules arises naturally in a world in which contracting parties are fully rational and have perfect foresight. Interpretation will play a larger role in worlds where agents err and draft defective contractual instruments.

Even within the limits of perfectly foresighted parties, optimal interpretation requires more than simply filling gaps. Shavell (2007) formalizes interpretation as a function from the set of contractual instruments into itself. An interpretive method takes the contractual instrument – a list of pairs of events and obligations – into another list of (event, obligation) pairs.[51]

To understand the role of interpretation, we must consider the drafting options available to the parties. Consider some state θ. The parties may draft a *specific* term that specifies obligations for θ only; they may draft a general term that specifies obligations for some event E with $\theta \in E$, or the parties may ignore θ and leave a gap in the contractual instrument. Both gaps and general terms arise because it is costly to draft a term.

Given this, it follows immediately that the optimal method of interpretation has several properties: (1) specific terms are enforced literally; (2) gaps are filled with "majoritarian" defaults, and (3) general terms are, in some cases, overridden; the majoritarian default rule may be applied to some $\theta \in E$. These results hold for a wide class of exchange environments. There are, however, several caveats. First, there is no renegotiation. Second, there is perfect contract enforcement. Finally, the it is not obvious how to link the formal language in this model to observed phenomena. What is a "majoritarian default" and how can it be measured? In fact, if these concepts where well defined, a contract could simple be prefaced by directions to the court that they should fill gaps with majoritarian defaults. The difficulty is that the real work of the courts it to figure out what is a majoritarian default, something about which the theory is currently silent.

[51] As Shavell observes, and as we noted in section 2.2 above, an interpretive method might take more than the text of the contractual instrument as its domain; the court might refer to additional texts and actions to determine the obligations of the parties.

4.2.5 Delegation, Renegotiation and Interpretation

Interpretation determines the obligations of the parties to a contract *ex post*. There are two other mechanisms for the *ex post* specification of obligations that serve as partial substitutes for judicial interpretation of the contractual instruments. Unlike judicial interpretation these two *ex post* methods – delegation and renegotiation – have received extensive treatment in the economic literature.

Each of these three methods permits the parties to impose or to alter an obligation *ex post*. They differ in the identification of the agent that determines the content of the *ex post* obligation. Delegation gives *one* of the parties the exclusive right to determine the obligation, perhaps within limits specified in the contractual instrument. Renegotiation permits the parties jointly to determine the content of the obligation *ex post*. Under interpretation, a third party, the court, has the sole power to specify *ex post* the content of the obligation.[52]

Despite this common attribute, interpretation differs in one important respect: interpretation is always an available. Delegation (and the decisions of the delegate) and renegotiation occur in the shadow of the law. It is important understand how legal institutions shape the operation of delegation and renegotiation. The extent and operation of delegation within a contractual instrument only has the range and force permitted by a court after interpretation. Similarly, the outcome of a renegotiation depends on the disagreement point and that point is determined by the interpretive practice of the court and the remedial rules of contract law.

We focus on delegation or authority. As Lafontaine and Slade (2011) observe, contractual instruments commonly include an allocation of control rights or authority. We shall see that the reasons for such delegation mirror the reasons that provoke interpretation. This literature may thus shed light on how best to model interpretive questions.

There are essentially three reasons for the allocation of authority to one party or another, namely unforeseen or costly to foresee contingencies, asymmetric information and the allocation of *ex post* bargaining power.

The first formal model of authority, indeed the first modern contract model, is due to Simon (1951).[53] He considered a model in which parties sign a contractual instrument, the buyer learns the state of nature, and then the level of output that the seller is to provide the

[52] A contractual instrument might identify a third party other than the court. Many contractual instruments provide for arbitration, a third party mechanism.

[53] Notions of authority and control are also central to the theory of the firm - see Gibbons (2005).

buyer is determined. Formally the optimal allocation $\{q(x), p\}$ solves:

$$\begin{aligned} max_{\{q(x),p\}} \quad & E\{B(x,q(x))\} - p \\ subject\,to: \quad & \\ & p - E\{C(q(x))\} \geq u^0 \end{aligned}$$

where x is a random variable, $c(q)$ is the cost of producing q, $B(x,q)$ the benefit of q in state x, p is the price and u^0 is the sellers outside option. Simon (1951) supposes that x is not contractible and known only to the buyer. Hence, the buyer is constrained to choose between two contractual instruments. The first is a *sales contrac*t where price p and quantity q are set in advance. The second is an *employment contract*, a contractual instrument in which the seller (employee) agrees to supply any amount in a set Q at a price p. The benefit of this contractual instrument is that the buyer can adjust q as a function of information received after the contractual instrument is signed.[54]

In terms of enforcement, notice that the employment contract has two elements. First, the buyer, after observing x, creates a performance obligation, $q(x)$ for the seller. If the seller does not perform, then the seller has breached. In employment relationships, such breach does not typically lead to damages, but to the dismissal of the employee. Thus, the employment contract is enforceable only to the extent that dismissal is a sufficiently large penalty. A second element to the contractual instrument, namely the requirement that $q(x) \in Q$, might be enforced by requiring that the seller can only be dismissed with just cause. If the employer asks for an action outside of the set Q, then the seller has a right to refuse to carry out such actions.

An obvious application of the model is to the theory of the firm – namely a theory that predicts when contracts are within the firm and when they are between firms. Alchian and Demsetz (1972) argued that Simon's employment contract could not be construed as an explanation for why we have firms. They observe that the buyer and seller are free to reach any agreement they wish, and should circumstances change the contract terms can be renegotiated. Thus, as MacLeod (2002) shows formally, the introduction of renegotiation ensures that Simon's sales contract can always achieve the first best. This result suggests that, for a complete model of authority, one needs to add additional ingredients. One such

[54]Simon has in mind an elemental theory of bounded rationality that is captured by the hypothesis that x cannot be explicitly contracted upon - a theme that the profession would not explore again until the 1980s. The main result is that when uncertainty is sufficiently important (variance of x sufficiently large) then the employment contract is most efficient, otherwise parties will use a sales contract.

ingredient is asymmetric information.

There are two ways in which asymmetric information may lead to an allocation of authority rights. The first of these has its roots in Williamson (1975)'s idea that contractual relations are plagued by *ex post* opportunistic behavior that leads to costly contract renegotiation. These costs are formally captured in the Myerson and Satterthwaite (1983) model. If there is two sided asymmetric information, and one is not sure if it is efficient to trade, then it is not possible to implement the efficient allocation. Ayres and Talley (1995) and McKelvey and Page (2002) show that one way to enhance the efficiency of bargaining with two sided asymmetric information is to modify the status quo point in the event of a disagreement.

Asymmetric information is often invoked to explain why there may be costly contract negotiation. A less emphasized implication is that investing in more information can reduce negotiation costs. In particular, if there is *one-side* asymmetric information, then it is possible to achieve an *efficient* allocation by allocating all bargaining power to the informed party. Chakravarty and MacLeod (2009) note that this observation is consistent with the standard clauses in AIA form contracts that allocate authority for design changes to the buyer, while requiring the buyer to compensate the seller for any *measured* out of pocket costs arising from the change. This rule makes sense because while in principle one can measure construction costs with careful book-keeping, the subjective valuation a buyer assigns to design is difficult, if not impossible to measure.

This difficulty is reflected in the common law enforcement of sales contracts that place an obligation upon sellers to respond to changes in delivery terms requested by the buyers, and provides an explanation of why specific performance is not used in these cases. It is efficient to grant authority to the buyer to modify her requirements, while protecting the sellers with expectations damages that ensure her profits are not reduced by the buyers actions.

The the Unites States Uniform Commercial Code (UCC) is quite explicit regarding damages when the buyer refuses to accept delivery of goods:

> § 2-708. Seller's Damages for Non-acceptance or Repudiation.
>
> (1) Subject to subsection (2) and to Section 2-723:
>
> (a) the measure of damages for nonacceptance by the buyer is the difference between the contract price and the market price at the time and place for tender together with any incidental or consequential damages provided in Section 2-710, but less expenses saved in consequence of the buyer's breach; and
>
> (b) the measure of damages for repudiation by the buyer is the difference between the contract price and the market price at the place for tender at the

expiration of a commercially reasonable time after the seller learned of the repudiation, but no later than the time stated in paragraph (a), together with any incidental or consequential damages provided in Section 2-710, less expenses saved in consequence of the buyer's breach.

(2) If the measure of damages provided in subsection (1) is inadequate to put the seller in as good a position as performance would have done then the measure of damages is the profit (including reasonable overhead) which the seller would have made from full performance by the buyer, together with any incidental damages provided in this Article (Section 2-710), due allowance for costs reasonably incurred and due credit for payments or proceeds of resale.

Notice that section 1(b) states that damages should be reduced by the amount saved by the buyer's breach. More generally, the seller under the common law has an obligation to mitigate the lost. This would include stopping production at the time the buyer sends a letter repudiating the contract. Under the rule of specific performance the seller would have the right to continue production and then demand the seller to pay for the goods (which might be optimal if the market price were less than the agreed upon price for the goods).

Aghion and Tirole (1997) introduce an innovative model of the authority relationship that extends this theme. Their idea is that authority arises from the access to information necessary to act. In their model, the principal with formal authority will delegate authority to an agent who has better information. However, they will reserve the right to overrule an agent when they are better informed. This model can be viewed as another way of explaining employment contracts. The law gives the employer broad discretion when allocating tasks to the employee, and the employer always has the formal right to change an employee's task as long as it is within the scope of work.

Finally, the allocation of authority also affects the allocation of bargaining during contract renegotiation that can occur when contractual instruments are incomplete and there is the potential for holdup. The property rights literature of Grossman and Hart (1986) and Hart and Moore (1990) implicitly builds upon the idea that courts do not generally enforce contract breach through specific performance. Rather than regulate the relationship by contract, they observe that bargaining power of parties can be allocated via ownership rights over assets. Rajan and Zingales (1998) extend this idea to relationship within the firm, where an organization can choose how much power agents have to grant access to firm resources.

5 Concluding Discussion: Economics, Law and Practice

A theory of contracts studies the relation among four theoretical objects: exchange environments, contractual instruments, contract law, and contractual behavior. The relation among these concepts is complex. In the short term, the exchange environment and contract law are exogenous; we thus seek to explain both contractual instruments and the resulting contractual behavior in terms of the exogenously given contractual environment and contract law. From a wider perspective, however, both contract law and, to a lesser extent, the exchange environment are endogenous. To a large extent, we choose the legal rules that govern contractual instruments. Similarly, agents choose the environment in which they contract; moreover they might act to alter the exchange environment in which they find themselves.

Each aspect of the literature on contract focuses on a different explanatory question. The mechanism design literature asks: for a given contractual environment, does a mechanism exist that induces efficient contractual behavior? In this literature, a mechanism conflates contractual instruments and contract law; it examines *contracts*, the set of obligations that result from the operation of contract law on contractual instruments Nevertheless, the literature assumes a legal system that is basically utopian.

The incomplete contracts literature, by contrast, seeks to explain the structure of observed contractual instruments. It often begins with some observed contractual instrument and then asks: in what exchange environment is a specified contractual instrument optimal for the parties? Once again, the structure and competence of the legal system is largely idealized. The incomplete contracts literature explains the oddities of contractual instruments largely without reference to any features of contract law.

The literature on the economic analysis of contract law, finally, abandons the assumption of an ideal legal system. Rather, it often asks: given a contractual instrument within a specific exchange environment, how does the legal rule influence contractual behavior? Here, the legal system is not ideal though the literature has primarily relaxed only the assumption of perfect enforcement.

Each of these literatures has provided significant insight into contractual behavior and the structure of contractual instruments. The mechanism design literature, for instance, has provided clear, formal accounts of specific "transaction costs" such as asymmetric information and analyzed the extent to which these features of the contractual environment impede efficient exchange. The assumption of an ideal legal system, however, limits the practical insights available from these models. An assumption of perfect enforcement, for example, implies that contractual behavior always conforms to the obligations embodied in the con-

tractual instrument. Indeed, rational parties need never invoke an ideal legal system; the shadow of the law is sufficient to regulate behavior. Similarly, the assumption that interpretation is unambiguous, clear and foreseeable implies that parties can always implement perfectly their intentions.

The economic analysis of contract law adopts complementary simplifying assumptions. It generally studies very simple exchange environments; we have little idea how the ideal legal rule would vary across exchange environments. Similarly, it generally focuses on the effects of legal rules on contractual behavior but ignores the effects of legal rules on contractual instruments. It has provided few explanations for variation in available remedies across exchange environments and contractual instruments. Why, for instance, are common law employment contracts at-will rather than protected by expectation damages? Moreover, the formal study of interpretation is in its infancy. Models have very crude representations of the the rules of interpretation in part because the literature has not exploited the language formulated in Battigalli and Maggi (2002).

This caricatured sketch of these literatures points clearly to promising paths of future research. We need to meld the sophisticated analyses of exchange environments and contractual instruments to the simple models of non-ideal legal institutions. The mechanism design literature might investigate the set of achievable allocations under non-ideal legal systems. Imperfect enforcement will impede the realization of first-best allocations. How good must contract enforcement be to yield the first-best? How costly is imperfect enforcement?

Relaxing the assumption of unambiguous interpretation is apt to be both more difficult and more fruitful. Contracting agents rarely use new or innovative language in their contractual instruments. Contractual terms that have been subject to extensive interpretation provide a more certain environment against which to contract. This observation that many contractual terms might be sub-optimal relative to the world in which interpretation is unambiguous and costless. Thus, at least some features of observed contracts, likely respond to the failings of the courts and contract law.

In terms of a way forward, the first step is to work more on models that help us build empirical representations of the legal system. Theories create conceptual categories that should have analogues in practice. Second, what are the testable implications of these theories? There is surprisingly little discussion of how one could formulate an empirical hypothesis that can be brought to the data.

One of the real difficulties with attempting to study contract law is that it is impossible to build data on the universe of contracts. Litigated cases are the exception, rather than

the norm. Moreover, when drafting a contract parties draw upon both litigated cases and industry practice. Hence, as Manski (1993) showed in the context of social networks, it will be very difficult to identify the causal impact of contract law upon contract performance.

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