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The Market for Legal Lemons

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Abstract

This paper develops a theory of contracts where agents can legally commit their principals. In contrast with standard models, adverse selection arises even if the quality of the goods being exchanged is observable and verifiable. The reason is that a third party who contracts with the agent may be uninformed about the legal authority the agent has been granted by the principal and hence on the extent to which the agent's acts commit the principal. Private ordering solutions to this "legal lemons" problem, such as voluntary disclosure of information by the principal, and certification of the agent's authority by a professional, fail to achieve the first best. In a variety of circumstances, public ordering solutions, such as restrictions on the choice of the certifying professional, and the public registration of contracts, may be efficient. Our model explains numerous empirical regularities in both corporate and property law, including rules protecting good-faith third acquirers.

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1. Introduction

This paper develops a theory of contracts where agents can legally commit their principals. In contrast with standard models (Akerlof 1970), adverse selection arises even if the quality of the goods being exchanged is observable and verifiable. The reason is that a third party who contracts with the agent may be uninformed about the legal authority the agent has been granted by the principal and hence on the extent to which the agent’s acts commit the principal.

Private ordering solutions to this “legal lemons” problem, such as voluntary disclosure of information by the principal, and certification of the agent’s authority by a professional, fail to achieve the first best. In a variety of circumstances, public ordering solutions, such as restrictions on the choice of the certifying professional, and the public registration of contracts (Arruñada 2003, 2010; Arruñada and Garoupa 2005), may be efficient. Our model explains numerous empirical regularities in both corporate and property law, including rules protecting good-faith third acquirers.

The rest of this paper is organized as follows. Section 2 presents the model. Section 3 analyzes the legal lemons problem when courts do not give priority to good-faith acquirers when enforcing contracts (property rule). Section 4 analyzes the legal lemons problem when courts do give priority to good-faith acquirers (contract rule). Section 5 concludes.

2. The model

2.1. Setup

There are three players in the model, all of them risk-neutral: a principal P, an agent A, and a third-party T. P knows he may need T, at some point, to undertake a certain action *a*, which may be of very diverse nature, from supplying capital to selling assets and goods and providing services. The action costs $C(a)$ to T, and generates a potential benefit $\pi(a)$ for P. However, economies of specialization imply that this benefit can be realized only if P delegates A to contract the action with T.[1]

A receives a private benefit $B(a)$ from T's action, so he would prefer to contract the action $a^A \equiv \arg\max B(a)$. Nevertheless, P may be able to have A contract his preferred action, provided that A cares about his future relationship with P (or his reputation). We model this point by assuming that, if A is a "normal" agent, he will contract the action dictated by P unless he faces an extraordinary temptation to cheat, which occurs with probability α.[2] Conversely, if A is an "unreliable" agent, he will always attempt to contract the opportunistic action a^A.

We assume that P observes whether A is unreliable before hiring him, so that there is no adverse selection problem in the choice of agents, and that, when hiring an agent, P has equal probability of facing either type as a candidate. Moreover, we assume that $\pi(\cdot)$ and $B(\cdot)$ are concave functions, and $C(\cdot)$ is convex, so that all the action choice problems in the model will have an internal solution.

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[1] Normalizing the net benefit in the absence of specialization to zero is without loss of generality.
[2] For instance, α may be the probability that A's relationship with P terminates at the end of the game.

At the center of the model are three hazards. First, P may ask A to contract an action with T, and then claim that A was not authorized to contract in his name, so that he has no obligation to pay T. Second, after being hired by P, A may attempt to contract with T his own preferred action a^A, rather than the action requested by P. Finally, A may attempt to contract the action a^A in P's name even if P has not hired him as an agent.

To make these hazards relevant, we make three assumptions. First, T takes the action *a* before receiving the compensation *t*. For instance, the action performed by T may be a loan, or a sale on credit. This insures that the third party T is exposed to a non-payment risk whenever A contracts outside the limits set by P. Second, we assume that A has zero wealth (equivalently, we could assume that A has limited wealth[3]). This implies that neither T nor P can recover any damages from A in case of dispute. Finally, we assume that $\pi\left(a^A\right)+B\left(a^A\right)<0$, so that P will never hire an unreliable agent, and letting an unreliable agent contract in P's name will also be inefficient.

The sequence of moves in the model is as follows:

1. *Originative contract*: P observes A's type and decides whether to hire him. If P hires A, he asks him to contract an action with T. We call this the "originative" contract because, by defining A's power to commit P, it is the foundation for any subsequent contract that A may sign with T later on.
2. *Disclosure*: P chooses whether to make the originative contract observable to T.
3. *Subsequent contract*: A makes a take-it-or-leave-it offer (a, t) to T, which consists of a request to take the action *a*, in exchange for the compensation *t*. If T accepts, the action is taken, and the payoffs are realized. If accepted, the offer

[3] If A had unlimited wealth, there would be no problem since T could always rely on A's wealth for compensation. This is not a very realistic situation if, as in standard principal-agent models, A has human capital (expertise) and P has physical capital.

(a, t) will conform the "subsequent" contract, which interacts with but is separate from the originative contract signed by P and A at stage 1.

4. *Enforcement*: if the subsequent contract is inconsistent with the originative contract (that is, if A has contracted with T an action outside the set permitted by P, or if A has contracted with T without being hired by P as an agent), P may claim that the subsequent contract does not commit him. If the court rules for P (so called *property rule*), the subsequent contract will not be enforced and, given A's liquidity constraint, T will not be paid. If instead the court rules for T (so called *contract rule*), the subsequent contract will be enforced, and P will have to pay T. We assume for simplicity that, in case of dispute, courts automatically enforce contracts based on the applicable rule – that is, court-verification costs and litigation costs are all normalized to zero.

2.2. Informational assumptions

(1) T cannot observe the originative contract signed by P and A at stage 1. This implies that, when the property rule is used by courts to enforce contracts, T is uncertain about the consequences of contracting with A, because he does not know whether the subsequent contract commits P.

(2) T cannot observe either A's type (that is, whether A is normal or unreliable, and whether, in case A is normal, his preference is to cheat or to follow P's orders).

(3) The subsequent contract signed at stage 3 is publicly observable. This implies that the "physical" quality of the transaction between A and T is apparent to T and verifiable by courts.

(4) The payoff functions, $\pi(\cdot)$, $B(\cdot)$ and $C(\cdot)$, and the probability α, are all common knowledge. This implies that T can extract some information on the probability to be paid by observing the action that A proposes to him at stage 3.

Combined together, assumptions (1) through (3) highlight the difference between our model of legal "lemons" and Akerlof's model of physical "lemons". In a model *â-la* Akerlof, T would observe the originative contract and, therefore, he would be perfectly informed on whether his subsequent contract with A will be enforced by courts. Hence, adverse selection could only arise if some terms in the subsequent contract (a,t) were unobservable to T and unverifiable by courts. In contrast, as we will show here, when T cannot observe the originative contract, adverse selection may arise even when (a,t) is publicly observable, due to T's uncertainty on whether the subsequent contract will be enforced against P.

3. Property rule

We begin our analysis by assuming that, at stage 4, courts apply a property rule – that is, they enforce the subsequent contract against P if, and only if it is consistent with the originative contract signed by P and A at stage 1. This is the classic enforcement principle in contract and property law, according to which nobody can commit another person or transfer rights that they do not hold. In our case, the property rule implies that A cannot commit P towards T unless P has authorized him to do so.

Efficiency requires that A contracts with T the action

$$a^{FB} = \arg\max \pi(a) + B(a) - C(a). \tag{1}$$

We will now show that the action A will actually contract depends on P's choices at stages 1 and 2, and typically differs from a^{FB}.

3.1. Voluntary disclosure

By assumption (1), T ignores whether A is P's agent and the limits of A's authority. At the same time, T knows that if P intended to honor the subsequent contract signed by T and A, he would both specify in the originative contract, and ask A to offer, the action $a^*(t)$, which maximizes P's net profit

$$\pi(a)+B(a)-t,$$

subject to T's participation constraint

$$t \geq C(a). \tag{2}$$

In stating P's profit function, we are assuming that, at the end of stage 2, P pays A a salary equal to his reservation value $-B(a)$, so that P fully internalizes the private benefit $B(a)$ when dealing with A. Equation (2) implies that $a^*(t)=a^{FB}$. Given T's expected response, both when A is a normal type and when he is unreliable, he will gain nothing from offering to T the opportunistic action a^A, or any action other than a^{FB}, for in that case T would infer that he will not be paid and reject the offer.

The above analysis implies that, at stages 1 and 2, P can choose between two strategies. If he chooses the *disclosure strategy*, he will (1) specify the action a^{FB} in the originative contract, (2) ask A to show the originative contract to T prior to contracting, and (3) ask A to contract the action a^{FB} with T. If P chooses instead the *non-disclosure strategy*, he will (1) specify an action *different from* a^{FB} in the originative contract, (2) ask A to show a false originative contract to T, which does not mention the restriction on A's contractual authority, and (3) ask A to contract the action a^{FB} with T.

When A offers him the contract $\left(a^{FB}, t = C\left(a^{FB}\right)\right)$, T knows he will be paid only if P has followed the disclosure strategy. This implies that T's best response to P's strategy is to reject A's offer if he believes that P has not disclosed, and to accept it if he believes that P has disclosed. To compute P's best-response to T's strategy, note that, if P believes that T will reject A's offer, it will be (weakly) optimal for him not to disclose, because his expected payoff will be zero under both disclosure and non-disclosure. If P instead believes that T will accept A's offer, his payoff from disclosure will be $\pi\left(a^{FB}\right) + B\left(a^{FB}\right) - C\left(a^{FB}\right)$, whereas his payoff from non-disclosure will be $\pi\left(a^{FB}\right) + B\left(a^{FB}\right)$, because he knows that, absent disclosure, the judge will rule for him at stage 4 and, therefore, he will avoid paying T. Hence, P's best response to T's acceptance is non-disclosure.

We are now ready to prove the following

Proposition 1 (*legal lemons*): the unique Nash equilibrium is for P not to disclose, and for T to reject A's offer.

Proof: Since rejection is an optimal response by T to non-disclosure, and non-disclosure is an optimal response by P to rejection, (non-disclosure; rejection) is an equilibrium. To see that the equilibrium is unique, note that P's best response to acceptance is non-disclosure. However, T's best response to non-disclosure is rejection, so no equilibrium exists where either P discloses or T accepts.

Proposition 1 describes the adverse selection problem that occurs when trade between P and T is mediated by an agent, and the principal-agent originative contract is hidden to T, so that T is uncertain on whether A can commit P and, therefore, on whether his contract with A will ever be enforced. Particularly, Proposition 1 shows that P has no incentives to disclose the true originative contract to P because, by doing so, he would commit himself to pay T ex post without increasing T's willingness to trade, given that T is unable to verify whether P has disclosed the true originative contract or not (assumption 1). As a result, the originative contract remains hidden, any subsequent contract that A proposes to T ex post does not commit P (that is, subsequent contracts are the legal equivalent of Akerlof's physical "lemons"), and no trade occurs.

Importantly, this legal "lemons" problem, and the consequent market collapse, occurs despite the fact that the subsequent contract between A and T, (a, t), is observable and verifiable, so no adverse selection problem would arise if, as in Akerlof (1970), trade took place between P and T directly, without A's mediation.

3.2. Certified disclosure

The legal "lemons" problem may be mitigated if an outsider were asked to certify the originative contract disclosed by P. We model certification by assuming that, when P does not disclose the originative contract, a certifier will detect it, and will force P to disclose, with probability $p(r)$, where the independence level *r* denotes the extent to which the certifier is sensitive to P's corruption attempts. We assume that *r* is unobservable to T[4], that the cost of hiring a certifier with independence *r* is given by *r*,

[4] Suppose, instead, that the independence level *r* is observable to T. P would then have an incentive to choose the efficient level of *r* without need for regulation, so Proposition 2 below would no longer hold. All the other results in the model would continue to hold. We find the assumption that the certifier's independence level is unobservable to T realistic and consistent with our key assumption that the originative contract is unobservable to T: T does not know P personally and, therefore, he is unlikely to know whether a contracted certifier is close to, and hence independent from P.

and that the certification quality $p(r)$ is responsive to the certifier's degree of independence, in the sense that $p'(\cdot)>0$, $p''(\cdot)<0$, $p(0)=0$, and $\lim_{r\to\infty} p(r)=1$.

If P chooses the certifier, Proposition 1 will continue to apply, because P will find it optimal to (1) choose a certifier with zero independence (for instance, someone who is personally or professionally close to him), (2) specify an action other than $a^*(t)$ in the originative contract, (3) submit to the professional a fake originative contract that does not mention the limits to A's authority, and (4) ask A to contract the action $a^*(t)$ with T. If T believes that P follows this augmented non-disclosure strategy, he will optimally reject A's offer, and if P believes that T will reject A's offer, he will optimally follow the non-disclosure strategy, so (non-disclosure; rejection) is again an equilibrium. Moreover, the equilibrium is unique because, if P believed T to accept A's offer, his best response would be non-disclosure, as that would allow him to avoid paying T.

Suppose now that the professional's independence level *r* is not chosen by P, but by an efficiency-minded planner who aims to maximize total surplus and can commit to a given level of *r* irrespective of T's strategy. Then, given *r*, T will accept A's offer provided that it satisfies the participation constraint

$$p(r)t \geq C(a). \tag{3}$$

Participation constraint (3) differs from (2) because, in the presence of certification, T knows that the certifier will do a good job, and hence T will be paid, with probability $p(r)$. Anticipating T's response, A will ask T to take the action

$$a^*(r) \equiv \arg\max \pi(a) + B(a) - \frac{C(a)}{p(r)} \tag{4}$$

in exchange for the compensation $t = \frac{C(a)}{p(r)}$, where we have replaced the notation $a^*(t)$ with $a^*(r)$ because t is now a function of *r*.

Taking that into account, the planner will choose the efficient independence level r^{PR}, which maximizes the total expected surplus

$$\pi\left(a^*(r)\right) + B\left(a^*(r)\right) - C\left(a^*(r)\right) - r. \qquad (5)$$

Concavity of the surplus function in (5), together with the fact that $a^*(r)$ increases in *r*, insures that $r^{PR} > 0$. This proves the following

Proposition 2 (*legal lemons under certified disclosure*): P's private choice of certification quality is inefficiently low ($r^{PR} > 0$).

Proposition 2 implies that, if the independence of certification can be increased up to r^{PR} via regulation, such a regulatory intervention will be efficient. For instance, regulation could increase the independence level *r* by making certification mandatory and by assigning certification duties to a party who does not have a special business relationship with P (a civil servant, or a monopolist certifier), and who is subject to strong penalties in case of certification failure.

Let $V^* \equiv \pi\left(a^*\left(r^{PR}\right)\right) + B\left(a^*\left(r^{PR}\right)\right) - C\left(a^*\left(r^{PR}\right)\right)$ be the realized total surplus under regulated certification. Then, Proposition 2 implies that the maximum expected surplus that can be achieved when courts apply the property rule is equal to

$$S^{PR} \equiv V^* - r^{PR}. \qquad (6)$$

Note that, under the property rule, regulating certified disclosure may mitigate, but *does not* eliminate the legal lemons problem. Completely eliminating the problem would require to choose r^{PR} so that $p\left(r^{PR}\right)=1$ and, consequently, $a^*\left(r^{PR}\right)=a^{FB}$.

However, raising r is costly and, therefore, the efficient probability of successful certification, $p\left(r^{PR}\right)$, will be in general lower than one. As a result, A's transactions with T will continue to be distorted by T's uncertainty on the legal consequences of contracting with A, although regulation will reduce the distortion with respect to the case where P privately chooses the certifier, because $p\left(r^{PR}\right)>0$ and, consequently, $a^*\left(r^{PR}\right)>0$.

4. Contract rule

We now study the case where the law requires courts, at stage 4, to enforce the subsequent contract against P, irrespective of whether A has acted within the limits of the originative contract.

The advantage of this *contract rule* is that it fully neutralizes the legal lemons problem. T knows that, irrespective of whether A is acting in accordance with the originative contract, P will have to honor any subsequent contract (a,t) that he may sign with A. Hence, T will always accept A's offer provided that the participation constraint (2), that is, $t \geq C(a)$, is satisfied, without asking for a price premium. This implies that, when A is a normal agent and he is not tempted to cheat, which occurs with probability $\frac{1-\alpha}{2}$, the efficient surplus from trade,

$$V^{FB} \equiv \pi\left(a^{FB}\right)+B\left(a^{FB}\right)-C\left(a^{FB}\right),$$

is realized.

However, the contract rule has two drawbacks. First, when A is a normal type but he is tempted to cheat (probability $\frac{\alpha}{2}$), he will offer the opportunistic action a^A to T, and T will accept, because the contract rule insures him against non-payment. Second, A will offer the action a^A, and T will accept it, even when A is an unreliable type and, therefore, P does not hire him as an agent (probability $\frac{1}{2}$). In either of these two cases, the surplus from trade under the contract rule will be $V^A \equiv \pi(a^A) + B(a^A) - C(a^A) < 0$.

Like the property rule, the contract rule can be made more efficient via certification. For instance, the law may establish that the contract rule applies if, and only if a third party certifies that A is P's agent. Assume that such third party correctly certifies that an unreliable A is not P's agent with probability $q(r)$, and wrongfully certifies that an unreliable A is P's agent with probability $1-q(r)$, where r now denotes the certifier's independence with respect to A (as opposed to the previous section, where it denoted its independence with respect to P). In most of the analysis, we will assume that the certification technology $q(\cdot)$ has the same functional properties as $p(\cdot)$. Nevertheless, given its empirical relevance, we will also pay some attention to the limit case where $q(r) \approx 1$ for $r \approx 0$. When this occurs, we will say that A's identity as P's agent is *notorious*, in the sense that T can easily infer it from objective data, despite being unable to observe the originative contract between P and A.

When certification is added, the surplus from trade under the contract rule is V^{FB} with probability $\frac{1-\alpha}{2}$, V^A with probability $\frac{\alpha + [1-q(r)]}{2}$, and zero with probability $\frac{q(r)}{2}$, that is, when the certifier rightly declares that A is not P's agent, so that T refuses to trade. Hence, the total surplus will be larger than in the absence of certification, provided that $r > 0$.

Whatever P's choice of a certifier, an unreliable A who has not been hired by P will have an incentive to replace the certifier hired by P with a certifier chosen by himself, and characterized by the independence level $r = 0$. Hence, regulation will be necessary to insure that $r > 0$. Specifically, an efficiency-minded regulator will choose a certifier with degree of independence r^{CR}, where r^{CR} maximizes

$$\frac{1-\alpha}{2}V^{FB} + \frac{\alpha + \left[1-q(r)\right]}{2}V^{A} - r.$$

It follows from the assumption on $q(\cdot)$, and from the fact that $V^{A} < 0$, that $r^{CR} > 0$ and $0 < q\left(r^{CR}\right) < 1$ when A's identity as P's agent is not notorious, whereas $r^{CR} = 0$ and $q\left(r^{CR}\right) = 1$ when A's identity is notorious. We can summarize these results through the following

Proposition 3: the contract rule neutralizes the legal lemons problem ($t = C(a)$ for any action *a*), at the cost of facilitating A's opportunism (the action a^{A} is contracted with positive probability $\frac{\alpha + \left[1-q\left(r^{CR}\right)\right]}{2}$). Moreover, when A's identity as P's agent is not notorious, A's opportunism under the contract rule can be reduced via regulated certification ($r^{CR} > 0$).

The expected total surplus under the contract rule is given by

$$S^{CR} = \frac{1-\alpha}{2}V^{FB} + \frac{\alpha + \left[1-q\left(r^{CR}\right)\right]}{2}V^{A} - r^{CR}. \qquad (7)$$

4.1. Efficient rule: legal lemons vs. agency costs

The analysis from the two previous sections suggests that the choice between enforcing contracts with the property rule or the contract rule solves a tradeoff between *legal lemons* (minimized under the contract rule) and *agency costs* (minimized under the property rule). The reason is that, under the property rule, T will not be paid whenever A contracts with him outside the limits set in the originative contract. This has a cost, in that T will demand a price premium to compensate the risk of non-payment and, consequently, the volume of trade will be inefficiently low. However, T's exposure to non-payment under the property rule has also a benefit, in that T will have an incentive to screen A's propositions and refuse to trade whenever these look opportunistic. This benefit disappears under the contract rule, because whenever A is certified as P's agent, T has an incentive to passively accept his offers, knowing that P will pay him and, as a result, inefficient actions may be contracted when A is tempted to cheat on P.

Formally, the contract rule is efficient if, and only if $S^{CR} > S^{PR}$, which, given equations (6) and (7), can be rewritten as

$$(1-\alpha)V^{FB} + \left[1+\alpha-q\left(r^{CR}\right)\right]V^{A} - r^{CR} > 2V^{*} - r^{PR}. \qquad (8)$$

An inspection of (8) immediately proves the following

Proposition 4 (*property vs contract rule*): the contract rule is efficient when (i) T's action is economically important (V^{FB} is large relative to V^{*}), (ii) A's status as P's agent is notorious ($q\left(r^{CR}\right)\approx 1$ and $r^{CR}\approx 0$), (iii) a normal agent is rarely tempted to cheat on P (α is small), and (iv) the cost of A's opportunism is small (V^{A} is not too low).

Empirically, Proposition 4 predicts that the contract rule is more likely to be adopted for large, diverse and complex firms, whose legal representatives are likely to be involved in economically important transactions (V^{FB} large), and are more concerned about their reputation in the market for executives (small α). Since in large and complex firms a manager who has legal representation powers is less clearly distinguishable from a manager who does not have such powers (A's status as an agent is not notorious), the model also predicts that, in those firms, the contract rule will be accompanied by regulated certification of A's status. This prediction seems consistent with European law on business formalization, according to which the contracts entered by a firm's representative commit the firm even when the representative has exceeded his powers, provided that 1) the representative is publicly registered as such, and 2) the firm is a limited liability company – that is, it is more likely to be large, complex and diverse.

Proposition 4 is also consistent with the fact that, when an agent's status is notorious – for instance, because he has repeatedly performed a clearly identifiable set of transactions on his principal's behalf, or because he has been entrusted possession of certain movable assets whose sale is the core business of the firm owned by the principal – the contract rule is applied with no need for public registration (Arruñada 2010).

Another implication of the comparative analysis of property and contract rules is that the price that T demands to accept the subsequent contract proposed by A is always lower under the contract rule, because the price premium $\frac{1}{p(r)}$ disappears. Empirically, this suggests that, when the contract rule is applied, a firm may get cheaper credit from banks or suppliers than when the property rule is applied. If that is true, the introduction of the 1969 EU law on business formalization should have made credit cheaper for limited liability companies, all else equal.

5. Concluding remarks

In this paper, we consider a static environment where P, A and T interact only once. Allowing for repeated interactions, possibly with multiple third parties, would generate more efficient outcomes – for instance, by allowing T to terminate the relationship with A or P after observing opportunism, or to inform P's prospective counterparties about it. There are two reasons for focusing on a static model. First, unless the parties are infinitely patient and communicating opportunism costless, the inefficiencies highlighted by our model will arise, to some extent, even in the presence of repeated interactions. Second, opportunities for trade and specialization multiply when impersonal exchange is viable, but this requires solving the problem of "legal lemons", a problem that parties alone are idly equipped to solve.

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