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Agency Revisited

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[1] *H A R V A R D   B U S I N E S S   S C H O O L*
[2] *N O R T H W E S T E R N   U N I V E R S I T Y*

■ Abstract

The working paper presents a comprehensive overview of the principal-agent model that emphasizes the role of trust in the agency relationship. The analysis demonstrates that the legal remedy for breach of duty can result in a full-information efficient outcome eliminating both moral hazard and adverse selection problems in agency. The legal remedy motivates agents to behave in a trustworthy fashion and principals to place their trust in agents. In contrast to the standard agency model, a complete description of the principal-agent relationship cannot be based on explicit incentives alone but must recognize implicit incentives for trust behavior that derive from the legal, social and market context. These incentives reduce the need to rely on explicit incentives, allowing the principal and agent to reduce transaction costs by using incomplete contracts.

■ Key words

Principal-agent, agency theory, incentives, moral hazard, adverse selection, trust, breach of trust, legal remedies, explicit incentives and implicit incentives.

■ Resumen

Este documento de trabajo presenta una visión general del modelo clásico de agencia que acentúa el papel de la confianza entre principal y agente. El análisis demuestra que existen normas legales que eliminan los problemas de riesgo moral y selección adversa. El remedio legal anglosajón para el *breach of duty* permite al principal depositar su confianza en el agente. En contraste con el modelo clásico de agencia, este documento de trabajo demuestra que una descripción completa de la relación entre principal y agente no puede basarse únicamente en incentivos explícitos y debe reconocer los incentivos implícitos que se derivan de los contextos legal, social y de mercado. Estos incentivos reducen la necesidad de depender de estímulos explícitos, permitiendo reducir los costos de la transacción a través de contratos incompletos.

■ Palabras clave

Principal-agente, teoría de la agencia, incentivos, riesgo moral, selección adversa, confianza, abuso de confianza, remedios legales, incentivos explícitos e incentivos implícitos.

CONTENTS

1. Introduction

WHAT drives principals to rely on agents and agents to act in the interest of principals? Economics and law give very different answers to this question. The economic model of agency emphasizes contracts with explicit incentives for performance. Because of asymmetric information, contracts are imperfect and the agent's performance exhibits problems of moral hazard and adverse selection. In contrast, the law regards agents as fiduciaries, that is agents are in a position of trust. Agency law spells out the duties of the agent and provides penalties for breach of duty. In agency law, the formal contractual relationship between the principal and agent is characterized as mere *housekeeping* (Stefen, 1977). Many observed agency relationships involve contracts that do not specify performance incentives and feature fixed wage payments. Moreover, some observed agency relationships are voluntary associations that do not even require a formal contract [1].

To address the question of incentives in agency, we introduce a basic modification of the standard principal-agent model to show how trust can emerge in equilibrium. Economic agency models identify two main types of inefficiencies depending on the nature of information asymmetries between the principal and the agent. In the moral hazard model, the principal cannot observe the agent's actions and the first best contract involves shirking by agents because undetected shirking results in less personal cost and thus in higher utility [2]. In the adverse selection model, the principal is ignorant

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1. "Agency is the fiduciary relationship that arises when one person (a 'principal') manifests assent to another person (an 'agent') that the agent shall act on the principal's behalf and subject to the principal's control, and the agent manifests assent or otherwise consents so to act" (American Law Institute, 2001: § 1.01). Agency can result from a voluntary association (American Law Institute, 1957: § 1, Comment b). Thus, a person may act as another's agent with the corresponding duties even though the agent expects no compensation, such as an individual who holds a power of attorney on behalf of a family member. A son who holds a mother's power of attorney is subject to fiduciary duties — e.g. not to make gifts of her property to himself without authority — even though the instrument that states his powers does not refer at all to fiduciary duties. We thank Deborah A. DeMott for this clarification.

2. In economics, the expression *first best contract* refers to the optimal contract under symmetric and complete information for both principal and agent. When information is symmetric and

about the agent's intrinsic productivity and the first best contract involves lying by agents because by misrepresenting their true skill level agents can obtain more favorable terms [3]. The moral hazard and adverse selection problems are derived in models that do not feature exogenous incentives for trust that might arise from the social, legal or market context.

We introduce the standard legal remedy for breach of duty of service and obedience, in which agents *compensate* principals if a breach of duty is detected. In the case of unobservable effort, we show that the remedy for breach of duty eliminates the moral hazard problem and yields the full-information efficient outcome. In the case of unobservable information, we show that the standard remedy for breach of duty eliminates the adverse selection problem and yields the full-information efficient outcome.

We define trust as *equilibrium behavior*. This means that the principal's decision to trust the agent is a best response to what the principal expects the agent to do. In turn, the agent's decision to behave in a trustworthy fashion is a best response to what the agent expects the principal to do [4]. Given legal duties of agents and remedies for breach of duty, principals trust agents by offering agents fixed payment schedules. Agents act in a trustworthy fashion by choosing efficient effort levels and reporting information correctly to the principal, which are part of the agent's duty of service and obedience.

In practice, agency relationships are not formed in isolation: they take place against the background of agency law, they are embedded in social rela-

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complete, shirking and lying are always detected with probability one. The first best contract consists of a fixed fee and a harsh punishment when the agent shirks or lies. The punishment is such that it is never to the agent's advantage to shirk of lie. When the agent is untrustworthy and there are information asymmetries, the principal can do better by offering a contract different form the first best contract.

3. The terms moral hazard and adverse selection have their origins in the insurance literature. An insured customer has reduced incentive to take care in avoiding accidents. This reduced incentive is a form of moral hazard. On the other hand, a person seeking insurance has an incentive to over-represent his natural tendency to avoid accidents. This willingness to misrepresent a skill is known as adverse selection. Economists see moral hazard and adverse selection as *rational economic behavior* while insurance writers originally looked at these as *ethical* problems. For example, Faulkner observes that "moral hazard reflects the hazard that arises from the failure of individuals who are or have been affected by insurance to uphold the accepted moral qualities" (Faulkner, 1960: 327) and J. M. Buchanan defines moral hazard as "every deviation from correct human behavior that may pose a problem for an insurer" (Buchanan, 1964: 22) (both quoted in Pauly, 1968). Pauly (1968) in an influential paper, suggested that "rational economic behavior" and "moral perfidy" are mutually exclusive categories (Pauly, 1968: 58, 528). This notion, although criticized by Kenneth Arrow, was quickly adopted in economics and still today it is the dominant view (Arrow, 1968: 58, 537-538).

4. This concept of trust is based on that of Nash equilibrium (see Nash, 1950: 36, 48-49 and 1951: 54, 286-295). Our definition is sufficiently general as to allow the principal and the agent to move sequentially over time or to engage in repeated interaction.

tionships, and they frequently occur within market networks. These three types of *exogenous* forces provide *implicit* incentives for performance. *Legal duties, social norms,* and *market standards* create a system of *trust* that motivates principals to place their trust in agents and in turn motivates agents to behave in a trustworthy fashion. Principals place their trust in agents by relying on their performance and agents behave in a trustworthy fashion by performing their duties.

We examine economic models of explicit incentives in agency contracts and detail the historical development of the economic theory of agency. We explore the fundamental differences between legal and economic perspectives on agency, and we show that these two approaches can be fully reconciled only if the economic perspective is adjusted to reflect the actual context of principal-agent relationships. We conclude that complete description of the principal-agent relationship cannot be based on explicit incentives alone but must recognize exogenous incentives for trust behavior that result from the legal, social, and market contexts [5]. Understanding agency requires a unified framework that includes the exogenous legal, social, and market contexts in addition to explicit contractual incentives.

The legal, social, and market contexts provide motivations to trust that frame or complement explicit contracts. Although we examine the sources of trust, we do not distinguish the types of trust that might result from different explicit or implicit incentives since the observed behavior may be indistinguishable [6]. Moreover, we do not classify trust on the basis of the individual's frame of mind and whether or not the principal or agent would be disappointed by breach, since the decision process is not observable [7]. We assume that individuals are rational and that trust behavior is the

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5. Taking account of exogenous incentives requires a reexamination of the foundations of agency that seems particularly appropriate in view of the preparation of the Third Restatement of the Law of Agency. A restatement refers to a treatise on law published by the American Law Institute. The restatements, while nonbinding on the courts, exert considerable influence on the development and discussion of a body of law. The first restatement of the law of agency was given in 1933, being completed by Warren A. Seavey after the late Floyd R. Mechem. The second restatement was published in 1958 also supervised by Warren A. Seavey, hereafter Restatement (Second). The reporter for Restatement (Third) is Deborah A. DeMott, whose presentation takes account of many substantial changes in the law (see also DeMott, 1998: 31, 1035).

6. Barney and Hansen distinguish several types of trust: strong-form, in which opportunistic behavior would violate values or standards of behavior; semi-strong form, in which the parties are protected by explicit contracts, and weak form in which there are legal constraints on conduct (see Barney and Hansen, 1994: 15).

7. In contrast, Gambetta speaks of an individual's *disposition toward conditional trust* (Gambetta, 1988: 225). Such a disposition is meant to indicate that individuals would place trust in others.

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result of choices based on explicit and implicit incentives, and individual preferences, information, and beliefs about the actions of others.

The principal-agent model is without question a dominant theoretical framework in economic analysis [8]. It is the main mode of analysis in the study of contracts, organizations, incentives, the theory of the firm, corporate control, labor, law and economics, regulation, health economics, public and private procurement, and tax and subsidy policies [9]. The principal-agent model has profoundly influenced several generations of economic theorists. Economists consider problems associated with the design of efficient contracts such as contracting costs and inefficient performance. The model is used to study explicit incentives created by the terms of the formal contract between the principal and agent such as pay for performance, profit sharing, and various other contingencies. The economic model of agency also exerts a strong influence on other disciplines such as legal studies, political science, and management. Accordingly, including exogenous incentives such as legal remedies has far reaching implications for the predictions of the agency model.

The paper is organized as follows. Sections 2 and 3 introduce legal remedies for breach of duty into the standard principal-agent model for both the moral hazard and adverse selection variants. Section 4 points out the absence of trust and other governance mechanisms in the economic model of agency and considers the transaction costs of agency. Section 5 examines the origins of the agency model in the economic literature. Section 6 proposes extensions of the agency model to incorporate social norms, market standards and other types of governance mechanisms. Section 7 concludes the discussion.

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8. The economic literature on agency has experienced phenomenal growth since the early 1970s. The number of papers in Econlit with agency in the title, abstract, or heading gives some indication of the growth of the literature: 1971-1975, 19 papers; 1976-1980, 47 papers; 1981-1985, 107 papers; 1986-1990, 424 papers; 1991-1995, 767 papers; 1996-2000, 1125 papers. Excellent surveys include Daniel Levinthal (Levinthal, 1988: 9, 153), David Sappington (Sappington, 1991: 5, 45), Robert Gibbons (Gibbons, 1998: 12, 115) and Canice Prendergast (Prendergast, 1999: 37, 7). There are also several books on the economics of agency, see, for example, Macho-Stadler and Pérez-Castrillo, 2001; Salanie, 1997; Laffont, 1989.

9. For expositions of agency-based economic theories of the firm and corporate control see Aaron Alchian and Harold Demsetz (Alchian and Demsetz, 1972: 62, 777, reprinted in Demsetz, 1988: 119), Eugene F. Fama (Fama, 1980: 88, 288), Eugene F. Fama and Michael C. Jensen (Fama and Jensen, 1983: 26, 301 and 1983: 26, 327), Harold Demsetz (Demsetz, 1983: 26, 375) and Michael C. Jensen and William H. Meckling (Jensen and Meckling, 1976: 3, 305).

2. A Moral Hazard Model of Agency with Trust as Equilibrium Behavior

THIS section presents a model with exogenous incentives for trust arising from legal penalties for breach of duty. The analysis demonstrates that trust is supported as equilibrium behavior. We consider the effect of exogenous incentives both in the standard moral hazard model of agency. We modify the standard model by including external legal penalties and we show that the full-information efficient outcome is attained in equilibrium.

In the standard moral hazard model of agency, the principal pays the agent to carry out a designated task and the agent decides how much effort to devote to the task. The principal's problem is to design an incentive schedule that motivates the agent to choose a desired level of effort. The principal knows the agent's preferences with certainty but she cannot observe the agent's action or effort level. The principal needs some productive work to be done. In essence, the work consists of exerting some well defined, unidimensional, effort [10]. The principal hires an agent because she does not have the time or capability to do the work herself [11].

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10. There are several interpretations for the agent's cost of effort or disutility of work. The principal has to pay extra for the additional time that the agent needs to devote to the task. Another often-cited possibility is that the object of the agency is new to the agent and he needs to spend some time learning the necessary skills. The principal may need to pay the agent to overcome the psychological cost of performing a task that the agent does not enjoy or that conflicts with the agent's principles.

11. Several important assumptions underlie the economic model of moral hazard in agency. First, effort is unidimensional. Thus, there is one single aspect of performance that matters to the principal. Second, the principal knows precisely the agent's preferences. Third, principal and agent have the same beliefs on the probability distribution on outcomes induced by each effort level. Fourth, there is no future to the relationship: the model is static and the principal makes a take-it-or-leave-it contract offer to the agent. The moral hazard model has been extended to relax a few of these assumptions. For instance, Holmstrom and Milgrom (1992) have studied the consequences of multidimensional effort or attention (see Holmstrom and Milgrom, 1991: 7, 24).

In the standard setting, the agent is motivated only by the explicit incentives for performance that are contained in the contract. This follows not only from the assumed economic rationality of the agent but also from the assumption that there are no incentives for performance outside the contract. In consequence, the principal must use a written contract to provide incentives to work. The contract provides the minimum payment needed to induce the agent to exert effort in a well-defined task. Because the agent is rational and there are no incentives outside the contract, the principal places no trust in the agent.

In addition, the economic model of agency assumes that effort is costly to the agent. As a result, an agent will devote no effort, time, or attention to the task unless explicit monetary incentives are tied to performance. This conclusion is not surprising in view of the assumptions that the agent's only incentives are contractual and that effort is costly. In short, the agent does not behave in trustworthy fashion and the principal does not trust the agent to perform the task.

Moreover, the agent's effort is assumed to be unobservable. The principal does not have the time or the technology to monitor the agent's effort so that the contract cannot directly specify effort nor can the contract provide rewards or penalties based on effort. What the principal can observe is the outcome following the agent's effort. The agency contract specifies how much money the agent will get as a function of the observed outcome. The contract is designed so as to satisfy incentive compatibility and individual rationality.

As with any contract, agency involves offer and acceptance. In the economic model of agency, the principal makes a take-it-or-leave-it contract offer to the agent. Then, the agent decides whether to accept or to reject the offer. If he rejects it, then the relationship is over. If he agrees to the offer, then he decides on how much effort to devote to the task. Next, nature plays: a random outcome that is correlated with the agent's level of effort ensues. Outcomes are assumed to be observable and verifiable, so that fully enforceable contracts can be based on them [12]. Finally, after the outcome is observed, the agent is paid according to the contract.

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12. *Observability* means that the principal can inspect the outcome. Because the outcome provides information on the agent's choice of effort, the principal pays the agent contingent on the outcome. *Verifiability* means that the principal can prove in court that a specific outcome that has been realized. If outcomes were not verifiable, then contracts that made the agent's compensation contingent on them, would not be enforceable and, thus, would be worthless. When the agent's actions are observable and verifiable, the three types of incentives for trust sustain cooperation. When agent's acts are observable but not verifiable, a reputation for honesty can be

Economic analysis of the agency model seeks to characterize the terms of an optimal agency contract. Because of moral hazard, the principal must rely on performance based rewards such as bonuses and commissions to induce the agent to work. The contract could potentially induce the agent to devote an efficient level of effort by allowing the agent to keep all the returns to his effort. Yet such a performance-based rewards system has the significant drawback that it shifts risk to the agent. Because the agent if risk averse, the principal needs to compensate the agent for the cost of risk-bearing to induce him to enter the relationship. Accordingly, to reduce the risk borne by the agent thus reducing the cost of compensating the agent for that risk, optimal contracts consist generally of a fixed payment plus some performance-based rewards (Holmstrom and Milgrom, 1991: 7, 24 and 1987: 55, 303-328; Prendergast, 1999: 37, 7). Just as in the sharecropping contract, the principal and agent share the results of the agent's effort and thus share risk. As in the discussion of sharecropping due to Adam Smith and Alfred Marshall, sharing output necessarily results in some shirking because the agent's rewards are not entirely based on performance.

Because there is no context to contracting: there are no social or psychological penalties to shirking and the agent takes no pride from hard work and good performance, there is no legal enforcement of contractual duties, and there are no other market standards. The principal and agent transact only once, so the incentives for performance that might emerge from a long-term relationship are absent [13]. Because there is no role for trust, the focus of economic analysis tends to be on problems that arise from the design of complete contracts. The standard analysis derives a complete contract that indicates precisely the duties and liabilities of each party in all states of the world.

As in the standard model, a risk-neutral principal contracts with a risk-averse agent. Let y represent the benefit to the principal of the agent's action. The principal moves first by offering the agent a contract $T(y)$ and then the agent chooses an action a. The principal's net benefit is $y - T(y)$.

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built and market reputation and social norms help promote economic exchange. Finally, when actions are non-observable and, thus, non-verifiable, there may only be social incentives for trust. In that case, without trust resulting from social norms, trade would break down and overall welfare reduced. Of course, actions may be observable or verifiable only under certain conditions so that information or a signal is obtained with some probability.

13. See however the dynamic principal-agent model with moral hazard in Roy Radner (1981: 49, 1127).

Suppose that the benefit to the principal y can take values V or v, where V is greater than v. The higher value V can be interpreted at the agent successfully completing the task while the lower value v can be interpreted as a mistake or imperfect outcome. The agent's action affects the likelihood of the two states. The principal cannot observe the agent's action. The likelihood of the high value is $p(a)$ and the likelihood of the low value is $1 - p(a)$. The agent's effort increases the likelihood of the good state so that the probability $p(a)$ is increasing in a. The agent's incurs a cost $c(a)$ of taking action. The risk-averse agent's utility is given by the concave utility function u, which is assumed to be continuous. The agent's reservation utility is normalized to zero [14].

The efficient action maximizes the principal's expected benefit net of the agent's cost, $p(a)V + (1 - p(a))v - c(a)$. Let a^* denote the efficient action that solves the first-order condition,

$$p'(a^*)(V - v) = c'(a^*) \tag{2.1}$$

This conforms to the standard of care in tort law defined by Judge Learned Hand. The agent's care should be such that the marginal cost of effort in avoiding a loss equals the marginal benefit to the principal in terms of avoided loss. Accordingly, let a^* represent a legal standard for the agent's action. Define $w^* = c(a^*)$ as the payment that would exactly compensates the agent for the cost of taking the efficient action.

The possibility of legal action against the agent depends on the observed state. If the high-value state occurs, that is if the principal receives V, then there is no investigation of the agent's action and no penalty can be imposed. If the low-value state occurs, that is if the principal receives v, there may be an investigation of the agent's action [15]. Suppose that if v occurs, the agent's action can be observed by a court with probability b, where $0 < b \leq 1$. If the low-value state occurs and if the agent's effort is observed and is found conform to the legal standard a^*, the agent does not face a penalty. If the low-value state occurs and if the agent's effort is observed and is found not to conform to the legal standard a^*, then the agent faces a penalty F given by:

$$F = m(V - v) \tag{2.2}$$

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14. A discrete state-space version of the standard model appears in Grossman and Hart (1983).

15. This corresponds with auditing models, such as Mookerjee and P'ng (1989) although these models do not investigate a third party audit as occurs in the legal context, nor do they investigate conditions for supporting the full-information optimum.

The penalty $V - v$ represents *compensation of the principal* in agency law, since the agent pays the amount of the principal's expected value that was lost due to the agent's negligence. An excess penalty $m > 1$ would correspond to punitive damages that are sometimes used in agency cases to counteract the imperfect observation of the agent's action on deterrence (see Cooter and Freedman, 1991). The penalty may be less than compensation, $m < 1$, due to limited liability or legal imperfections. Define m^* as follows:

$$m^* \equiv \frac{[p(a^*)V + (1 - p(a^*))v]}{V} \times \frac{1}{b}$$

Clearly, $m^* < 1/b$. We restrict attention to values of m in the interval *[m*, 1/b]*. For suitable values of *m*, m* can be greater than or less than one.

Trust is defined in the following manner. The principal trusts the agent by offering the agent a fixed-wage contract $T(y) = w^*$ in anticipation that the agent will choose an action a^* that satisfies the legal standard. After observing the fixed-wage contract w^*, the agent behaves in a trustworthy fashion by choosing the action a^* that satisfies the legal standard. We show given the legal remedy for breach of duty, *(w*, a*)* is a Nash equilibrium.

The principal does not gain from offering state-dependent incentives for the agent. Moreover, such incentives would impose risk on the agent, which would require that the principal increase payments to agent to compensate for the risk. Therefore, the principal's equilibrium contract is $T(y) = w^*$. This would hold even if the agent conformed to a standard that was greater than the equilibrium action of the principal-agent model and less than the efficient standard.

The agent must choose whether or not to conform to the legal standard. If the agent's conforms to the legal standard, the agent receives $u(w^* - c(a^*)) = 0$. If the agent does not satisfy the legal standard, then the agent receives the following utility,

$$U(a) = p(a)u(w^* - c(a)) + (1 - p(a))(1 - b)u(w^* - c(a)) + (1 - p(a))bu(w^* - c(a) - F) \quad (2.3)$$

By Jensen's inequality,

$$U(a) \leq u(w^* - c(a) - (1 - p(a))bF)$$

Noting that $F = m(V - v)$ and $m \leq 1/b$,

$$u(w^* - c(a) - (1 - p(a))bF) \leq u(w^* - c(a) + p(a)V + (1 - p(a))v - mbV)$$

By maximization of the right-hand side of the inequality over a, it follows that for any *a*,

$$u(w^* - c(a) + p(a)V + (1 - p(a))v - mbV) \leq u(w^* - c(a^*) + p(a^*)V + (1 - p(a^*))v - mbV)$$

Therefore, since *m* is in the interval *[m*, 1/b]*,

$$u(w^* - c(a^*) + p(a^*)V + (1 - p(a^*))v - mbV) < u(w^* - c(a^*))$$

it follows that *U(a) < u(w* − c(a*))*. Therefore, the agent will always choose an action that satisfies the legal standard.

Proposition 1. In equilibrium, given the legal remedy *F = m(V − v)* with *m* in *[m*, 1/b]*, and the performance standard *a**, the principal trusts the agent by offering the wage *w** and the agent acts in a trustworthy fashion by choosing the efficient effort *a**.

The result demonstrates that with the standard legal penalty for breach of duty, there is trust between the principal and agent in equilibrium. The agent chooses the legal standard so that a penalty is never imposed in equilibrium. Notice also that the agent does not experience any risk, since the agent receives a fixed wage and does not experience risk from the legal process.

If *m** is less than one, it follows that the efficient outcome can be attained even without full compensation of the principal. This occurs if the likelihood of observing the agent's type is greater than the ratio of the principal's expected value to the desired value V. For values of the compensation parameter m that are greater than *m**, the incentive schedule obtained in standard economic analyses of agency should be observed. However, the incentive schedule will be sensitive to the value of the legal remedy.

3. An Adverse Selection Model of Agency with Trust as Equilibrium Behavior

W$_E$ now show that trust can also be supported as equilibrium behavior in the standard adverse selection model of agency. The adverse selection model of agency captures the idea that agents may wish to misrepresent their abilities or preferences. If an agent wishes to exaggerate his cost of effort, for example, the principal must pay a premium, known as an information rent, to induce the agent to reveal that information truthfully (see, for example, Baron and Myerson, 1982: 50, 911; Guesnerie and Laffont, 1984: 25, 329; Mirrlees, 1971: 38, 175; Mussa and Rosen, 1978: 18, 301; Spence, 1974). In the adverse selection model, the principal pays the agent to carry out a designated task without full knowledge of the agent effectiveness in performing the task. In contrast to the moral hazard model, the principal can observe the agent's effort. However, even if the principal knows with certainty how much effort the agent devotes to the task, the problem of designing an efficient contract remains because the principal cannot directly observe the agent's preferences. He may have an incentive to exaggerate his costs.

The timing of events in the model is as follows. Nature plays first by selecting the agent's type. The agent learns his own type but the principal and other third parties cannot observe it. The principal can observe everything else, including the agent's effort. As before the contracting process includes offer and acceptance, with the principal making a take-it-or-leave-it offer to the agent. Since the agent is assumed to be opportunistic and his type is unobservable, both the low-cost and the high-cost agent have an incentive to claim to be high-cost agents, so that the low-cost agent misrepresents his preferences. The adverse selection problem arises when the principal cannot distinguish between the two types of agents.

Assume that the agent may have either a low or a high personal cost of performing the necessary task for the principal. The agent's cost of effort

is said to be the agent's type, where a low cost of effort can be interpreted as a high level of skill and a high cost of effort represent low skill. The principal and the agent obtain gains from trade whether the agent has a low or a high skill level but the relationship has greater value if the agent has a high skill level. Suppose that the agent's cost function is $c(a, \theta) = a^2\theta$, where θ can take two values, θ_1 and θ_2 with $\theta_1 < \theta_2$. For any given effort level a, agent θ_1 experiences less personal cost than agent θ_2. Assume that θ is private information to the agent.

Under adverse selection, principal will offer a menu of contracts from which the agent will be allowed to choose. The agent will chose the contract that best fits his interests. The principal designs the menu of contracts so that she will know with certainty the agent's preferences by observing the agent's choice from the menu. Thus, contracts are self-selecting and the agent will end up revealing his type. Each contract in the menu consists of a payment and an effort level and it is tailored to one of the agents' types. In the case of two types of agents, the contract written for the low-cost agent provides a large payment in exchange for large effort [16]. The contract written for the high-cost agent has lower payment but also requires lower effort. If both contracts gave the same payment, both types of agent would choose the same contract, the one that required less effort. The high-cost agent ends up getting the income that he could get elsewhere in the market, his reservation utility. The low-cost agent obtains informational rents: a level of income over and above the ongoing market rate [17].

As in the moral hazard model, there is no context to contracting in the standard adverse section model. An agent that misrepresents information suffers no social, psychological, legal or market penalties. The principal knows the population of possible agent types although she does not know the type of an individual agent. The task to be performed by the agent is unidimensional and the high-cost agent is less efficient than the low-cost agent in all respects. The principal can only provide incentives by use of written contracts; in particular, job design cannot be used to modify the

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16. The adverse selection model has been extended to more than two types of agents and to allow the agent to signal his type before the principal makes the contract offer (see, for example, Spence, 1973: 87, 355; Riley, 1979: 47, 331; Ross, 1977: 8, 23; Banks, 1991; Milgrom and Roberts, 1986: 94, 796; Myers and Majluf, 1984: 39, 575).

17. If information rents are too costly or if there are transaction costs of designing a complex menu, it is worthwhile for the principal to design a menu such that more than one type of agent chooses the same contract, a phenomenon known as *pooling*. Menus of contracts that induce agents to self select are called *separating*.

agent's cost to perform the task. Moreover, the principal makes a take-it-or-leave-it offer and no negotiation is possible.

As is standard, suppose that both the principal and the agent are risk neutral. Again, the likelihood of V is $p(a)$ and the likelihood of v is $1 - p(a)$. Assume $p' + a\,p'' > 0$ and $p'' \leq 0$, so that the marginal likelihood of V is non-increasing in effort. This assumption holds for example if $p(a)$ has the form a^x with $0 < x \leq 1$.

The efficient action maximizes the principal's expected benefit net of the agent's cost, $p(a)V + (1 - p(a))v - c(a, \theta_i)$. The efficient action a_i* for each type of agent $i = 1, 2$ satisfies the following first order condition,

$$p'(a_i*)(V - v) = c_1(a_i*, \theta_i) \tag{3.1}$$

Let w_i* be the payment that exactly corresponds to the cost to agent i of taking the efficient action, $w_i \equiv c(a_i*, \theta_i)$.

As is standard in adverse selection models, the agent's choice of effort a is observable and verifiable. The principal offers the agent a compensation schedule $T(a)$ based on the agent's action. By the revelation principle, it is possible to represent the mechanism as a direct revelation game in which the principal assigns a payment and an action to the agent based on the agent's report of his type. Since there are two types of agents, the principal offers the agent a schedule (w_1, a_1), (w_2, a_2) that assigns a payment and action based on the agent's report of type $i = 1, 2$. The direct revelation mechanism that corresponds to the equilibrium of the game must be incentive compatible and individually rational.

Trust is defined as follows. The principal trusts the agent by expecting him to truthfully report his type. The principal offers the agent of type θ_i a contract consisting of the efficient action and a payment that exactly compensates the agent for the cost of the action (w_i*, a_i*), where $w_i* \equiv c(a_i*, \theta_i)$. The agent behaves in a trustworthy manner by being honest and reporting truthfully.

The agent breaches his duty to disclose information if the agent reports his type inaccurately. If the high-value state occurs, there is no investigation on the veracity of the agent's report. If the low-value state occurs, there may be an investigation of the agent's type. In this case, the agent's type can be observed by a court with probability b. If v occurs and if the agent is found to have reported his type inaccurately, he faces a fine F. The agent does not face a penalty if he reported truthfully, regardless of the realized state. We show that if with the penalty $F = m(V - v)$, the agent reports truthfully. Thus, the equilibrium of the agency game corresponds to trust, with

the principal offering the incentive schedule with efficient effort and compensation exactly equaling the cost of effort, $(w_1{}^*, a_1{}^*), (w_2{}^*, a_2{}^*)$.

The efficient action for the low-cost agent is greater than the efficient action for the low-cost agent given the form of the agent's cost function and the assumptions on the probability function $p(a)$. Differentiating the first order condition in equation (3.1) implicitly with respect to θ, so that $da^*(\theta)/d\theta < 0$ which implies that $a_1{}^* > a_2{}^*$. Given the assumptions on the probability function p(a), it follows that $a_1{}^* p'(a_1{}^*) > a_2{}^* p'(a_2{}^*)$. Using equation (3.1), we have $a_1{}^* c_1(a_1{}^*, \theta_1) > a_2{}^* c_1(a_2{}^*, \theta_2)$ which together with the functional form of c, implies that $c(a_1{}^*, \theta_1) > c(a_2{}^*, \theta_2)$. Therefore, at the efficient effort levels, the more efficient agent has higher total cost than the less efficient agent. The higher effort level of the more efficient agent results in higher total cost.

It is now shown that the full-information efficient schedule is incentive compatible and individually rational for the agent. Consider first the less efficient agent. If he reports truthfully, he gets $w_2{}^* - c(a_2{}^*, \theta_2) = 0$. If he lies, he gets $w_1{}^* - c(a_1{}^*, \theta_2) - (1 - p(a_1{}^*))bF$ which is negative because $a_1{}^* > a_2{}^*$ and $\theta_1 < \theta_2$. So, the less efficient agent will choose to report truthfully. Moreover, the less efficient agent receives his reservation utility.

Consider now the high productivity agent. If he reports truthfully, he gets $w_1{}^* - c(a_1{}^*, \theta_1) = 0$. If he lies, he gets

$$w_2{}^* - c(a_2{}^*, \theta_1) - (1 - p(a_2{}^*))bF \tag{3.2}$$

Now, because $F = m(V - v)$ and m is in $[m^*, 1/b]$,

$$w_2{}^* - c(a_2{}^*, \theta_1) - (1 - p(a_2{}^*))bF \leq w_2{}^* - c(a_2{}^*, \theta_1) + p(a_2{}^*)V + (1 - p(a_2{}^*))v - bmV$$

By maximization and the definition of $a_i{}^*$,

$$w_2{}^* - c(a_2{}^*, \theta_1) + p(a_2{}^*)V + (1 - p(a_2{}^*))v - bmV < w_2{}^* - c(a_1{}^*, \theta_1) + $$
$$+ p(a_1{}^*)V + (1 - p(a_2{}^*))v - bmV \tag{3.3}$$

But, since m is in $[m^*, 1/b]$, the right-hand side of (3.3) is less than or equal to $(w_2{}^* - w_1{}^*) < 0$. Therefore, the more efficient agent is better off by acting in a trustworthy manner. Also, the more efficient agent receives his reservation utility.

So, both agents will report truthfully, and will receive their reservation utility. Therefore, the schedule offered by the principal is incentive compatible and individually rational.

Proposition 2. In equilibrium, given the legal remedy $F = m(V – v)$ with m in *[m*, 1/b]*, the principal trusts the agent by offering the efficient schedule *(w₁*, a₁*), (w₂*, a₂*)* and the agent acts in a trustworthy fashion by reporting his type truthfully.

The result demonstrates that with the standard legal penalty for breach of duty, there is trust between the principal and agent in equilibrium with asymmetric information about the agent's type. The agent reports information truthfully to the principal so that a penalty is never imposed in equilibrium. Because of the potential penalty for breach of duty, the principal can offer an incentive compatible and individually rational schedule that attains the full-information efficient outcome. For smaller values of m, the standard incentive schedule with asymmetric information will be observed but will be sensitive to the parameter value of the legal remedy m. Propositions 1 and 2 demonstrate how the introduction of a basic legal remedy fundamentally changes the nature of the agency relationship.

4. Absence of Trust in the Economic Model of Agency

THE principal-agent model examined by economists contrasts markedly with the treatment of trust in agency law. The principal-agent model in economics is an important and valuable instrument of theoretical analysis and has been applied to study a wide variety of relationships. Confronting the economic model with the legal framework should stimulate economists to adapt and extend the principal-agent model to help explain actual institutions as embodied in law and observed in markets.

The definition of agency in economics departs considerably from the legal definition and from standard business experience. In economics, the principal delegates authority to an agent who often is a subordinate employee performing a productive task for the principal, such as farming or piecerate manufacturing [18]. Yet, the legal definition of agency is clear: *an agent is a representative sent by the principal to represent the interests of the principal in transactions with third parties* [19]. Employees are agents when they act in ways that affect their employer's legal relationships with third parties, including acquiring relevant information and entering into transactions on the employer's behalf. Agency case law is replete with examples of agents acting as intermediaries for principals in such diverse activities as attorneys, auctioneers, brokers, realtors, stockbrokers and factors (Mechem, 1914). Agents acting as in-

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18. The agent performs a productive task requiring costly effort that is unobservable to the principal (see, for example, Ross, 1973: 63, 134). Cooter and Freedman adopt the economic definition of agency. They consider the principal-agent relationship as one type of beneficiary-fiduciary relationship: "a beneficiary entrusts a fiduciary with control and management of an asset", which they suggest may include cash, stock, land, a patent or copyright, valuable information, a business opportunity, or a business enterprise (see Cooter and Freedman, 1991: 66, 1045-1048).

19. "Agency's intellectual distinctiveness is its focus on relationships in which one person, as a representative of another, has derived authority and a duty as a fiduciary to account for the use made of the representative position" (DeMott, 1998: 31, 1035). See also Rasmusen (2001) on sources of authority in agency contracts.

termediaries are pervasive in commercial transactions [20]. Property owners and companies hire representatives to buy or sell goods and services for them. The large modern business organization could not exist without delegating the authority to engage in economic transactions to representatives charged with sales, purchasing, hiring, and finance [21]. The fundamental nature of the agent as an intermediary between the principal and third parties creates the need for trust.

Economic analysis of the principal-agent model tends to focus only on explicit contractual incentives, assuming away the legal, social, and market contexts. Economic analysis of agency begins with a clean slate, the Aristotelian or Cartesian tabula rasa, that excludes many of the characteristics that are observed in actual agency relationships. Accordingly, the economic model of agency generally seeks to derive the optimal contract between principal and agent from first principles without reference to exogenous incentives. Although this approach yields important insights about contract design, the model is unlikely to generate meaningful empirical predictions without reintroducing the exogenous incentives that derive from the legal, social, and market contexts. By ignoring the social, legal and market foundations of trust, the economic model of agency generates dramatic but questionable conclusions regarding shirking and lying by agents.

In the economic model of agency the agent has no *fiduciary duties;* that is, the principal places no trust in the agent. Instead, she designs a *complete* contract to induce the agent to work sufficiently hard or to accurately report his type. In addition, there is a very limited notion of *authority* because the principal does not actively control or monitor the agent [22]. The principal's role is limited to writing contracts that consist of a payment schedule.

The reliance on explicit contractual incentives in the economic model of agency eliminates trust and other governance mechanisms from the analysis. For example, the agent faces no legal penalties from breach of fiduciary duty. In the moral hazard setting, the agent incurs a cost of effort and has no other incentive to devote effort to the task at hand. In the adverse selection setting, the agent has no incentive to reveal private informa-

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20. Daniel F. Spulber emphasizes the role of agents as intermediaries in market allocation and in the theory of the firm (Spulber, 1999).

21. American Law Institute (2001) recognizes the importance of agents to large organizations, including both for-profit business corporations and not-for-profit organizations, such as universities (see DeMott, 1998: 31, 1035).

22. Because the agency contract as modeled in economics is complete, there is no need for the principal to provide interim instructions to the agent in the course of his agency.

tion or to perform a task for the principal. Because there is no social, legal, or market-related motivation to devote effort to a task or to disclose information, the economic model predicts that the principal places no trust in the agent and the agent does not behave in a trustworthy fashion.

The absence of trust in the economics of agency reflects a common assumption in economics that trust behavior is irrational [23]. Such a view is most clearly expressed by Oliver Williamson who defines opportunism as *self-interest seeking with guile* [24]. He maintains that parties to a transaction will seek to take advantage of each other by not revealing private information or by breaching the contract whenever it is to their personal advantage to do so, provided that it is difficult to prove such transgressions to a court (Williamson, 1975, 1979: 22, 3 and 1985) [25]. Williamson argues that trust must be excluded from economic models: "It is redundant at best and can be misleading to use the term 'trust' to describe commercial exchange for which cost-effective safeguards have been devised in support of more efficient exchange. Calculative trust is a contradiction in terms" (see Williamson, 1993: 36, 453, 463) [26]. Williamson

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23. Pauly's view that rational economic behavior and moral perfidy are mutually exclusive influenced Steve Ross' model of agency (see Pauly, 1968: 58, 528).

24. Oliver Williamson characterizes trust as irrational. He emphasizes two crucial assumptions about human behavior: that individuals are boundedly rational and that individuals are opportunistic, which he defines as self-interest seeking with guile (see also Williamson, 1993, 36: 453 and 1985: 140).

25. Governance structures such as contracts and organizations are defined as *the institutional framework within which the integrity of a transaction is decided* or *the institutional matrix within which transactions are negotiated and executed.*

26. According to Williamson, there are three types of trust: calculative, personal, and hyphenated. *Personal trust* is the kind of trust that emerges in close personal relationships such as those between friends and family. According to Williamson, personal trust is based on three principles: the trusting person must consciously refuse to monitor the trustee, the trusting person must be predisposed to ascribe good intentions to the trustee when things go wrong, and the trusting person must treat the trustee in a discrete structural way. There is no calculativeness involved in personal trust. In Williamson's view, this type of trust is reserved for very special relations, and cannot arise in commerce. In his view, personal trust would be irrational and absurd in commercial dealings. Williamson further asserts that personal and calculative trust are incompatible, calculativeness will damage personal relationships. According to Williamson, personal trust "is warranted only for very special personal relations that would be seriously degraded if a calculative orientation were 'permitted'. Commercial relations do not qualify" (at 486). Because Williamson assumes that personal trust cannot arise in commerce, he recommends that it not be represented in formal models of economic phenomena. *Hyphenated trust* refers to the effect of the cultural and institutional contexts within which transactions take place. The idea here is that context constrains the acts of agents, principals, and third parties. Williamson distinguishes six kinds of contextual variables: societal culture, politics, regulation, professionalization, networks, and corporate culture. According to Williamson, because in economics these contextual variables are taken as given, economists should not be concerned about hyphenated trust. Williamson concludes that *given an institutional context,* agents act in a calculative way, so that is presumably the only type of trust that should matter in an economic model. Our analysis disagrees with that of Williamson in a number of respects.

argues that if a principal finds it rational to rely on an agent, the situation cannot be described as trust [27].

However, as we have emphasized, trust involves much more than the outcome of a cost-benefit analysis. The actions of the principal and agent are based on their expectations of the actions of the other party to the relationship. Thus, contrary to Williamson, this suggests that implicit incentives resulting from context will affect the equilibrium actions of the principal and agent [28]. Richard Craswell's critique of Williamson emphasizes that trust *as behavior* should be distinguished from trust *as cause of behavior* (Craswell, 1993: 36, 487-500). Craswell rightly points out that using trust as *explanans* is problematic because it involves "a cognitive 'leap' beyond the expectations that reason and experience alone would warrant: where opportunism might be expected, trust prevails" (Craswell, 1993: 36, 492 quoting Bradach and Eccles, 1989: 15, 97, 104 quoting Lewis and Weigert, 1985: 63, 967). Rather trust should be the *explanandum* in economic models of agency. A growing literature considers the relationship between trust and economic, legal, and political institutions (see Shepherd and Zacharakis, 2001: 3[2], 129-149; McGillivray and Smith, 2000: 54[4], 809-824; Glaeser, Laibson, Scheinkman and Soutter, 2000: 115[3], 811-846; Burnham, McCabe and Smith, 2000: 43[1], 57-73; Dyer and Chu, 2000: 31[2], 259-285; Chen, 2000: 16[1], 209-232; Lyon, 2000: 28[4], 663-681; Fahr and Irlenbusch, 2000: 66[3], 275-282).

Trust as behavior represents rational equilibrium strategies: principals trust agents and agents behave in a trustworthy fashion, with the expectations of both parties justified by equilibrium actions of the other party. Thus, trust involves actions of the principal that rely on agent performance and actions of the agents that anticipate the principal's trust. By defining trust as behavior, it is no longer necessary to categorize types of trust based on various causes of trust behavior. Rather, the causes of trust can properly be regarded as incentives for trust behavior by agents and principals. Incentives for trust can be identified by examining contextual effects. The resulting trust behavior is generic in that similar types of trust behavior can result from

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27. By the term calculative trust, Williamson seems to mean simply that individuals act rationally and decide to take a risk (see also Gambetta, 1988; Coleman, 1990). If r is the probability that the agent makes the decision that is to the best interest to the principal, G is the gain the principal obtains if the agent makes the right decision, and L is the loss to the principal if the agent does not honor trust, then the principal will rely on the agent if the principal expects to benefit from doing so, that is, $rG + (1 - r)L > 0$. For Williamson, this type of calculation should not represent trust.

28. Richard Craswell points out that trust involves more than a game against nature, since there is interaction with other people (see Craswell, 1993: 36, 487-500; Coleman, 1990: 91). Partha Dasgupta recognizes the effects of incentives on trust (Dasgupta, 1988).

different types of incentives, whether contractual, social, legal or market-based. Thus, agents acting in accord with the principal's interests or reporting information accurately to the principal can result from different types of incentives. This approach allows for the study of trust that distinguishes between incentives for trust and the resulting actions of agents and principals.

Paradoxically, even though the economic model of agency assumes away explicit costs of negotiation and contract design, the model nonetheless overstates transaction costs. The economic model of agency demonstrates the existence of behavioral inefficiencies in the form of moral hazard and adverse selection. These behavioral inefficiencies are referred to as *agency costs,* which are transaction costs for the principal and agent. Agency costs overstate transaction costs because the principal-agent model does not include trust and other governance mechanisms.

In the economic model of agency there are no explicit costs of negotiating and designing the contract, so that there appear to be no transaction costs [29]. The task of the agent is simplified to be the choice of effort or some other basic indicator rather than more complex tasks such as interaction with a third party. There are either few possible states of nature or, if many states are allowed, they are described by a simple range of values. Because the states of the world are simple shocks, the principal can easily list all future contingencies. The principal has no difficulty in writing down the optimal course of action in every possible state of the world. Contract drafting costs and negotiation costs are assumed to be zero. Language is finely grained enough to describe contingencies in full detail and to communicate the agent exactly what needs be done in every contingency (Al-Najjar, Casadesus-Masanell and Ozdenoren, 2003). Further, the principal is a specialist on the task to be performed by the agent, she knows what must be done in every possible set of circumstances.

The economic model of agency effectively overstates transaction costs by emphasizing moral hazard and adverse selection problems. Because the agent has no other motivation to devote effort to the task, the principal relies on explicit incentives. However, the contractual incentives must perform a double duty, stimulating effort and compensating the agent. As already noted, there is a tradeoff because of the agent's aversion to risk, so that the

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29. The concept of transaction cost was first introduced in economics by Ronald H. Coase (1937: 4, 386). Transaction costs are the costs associated with using a specific method of governance to conduct transactions. For example, the transaction costs of conducting an arms-length market transaction include: finding transacting parties, communicating, negotiating, forming and monitoring contracts, and enforcing performance.

contract is necessarily imperfect, tolerating some level of shirking. This is the classic problem of performing two tasks with a single instrument. The practical solution to the problems of shirking and misrepresentation of information is to motivate the agent with additional incentives, including social, legal and market forces.

In addition, the contract designed by the principal must be relationship-specific since it is based on the preferences and other characteristics of the principal and the agent. In the moral hazard problem for example, the form of the contract is affected by the degree of risk aversion of the agent, the opportunity cost of the agent, the agent's marginal cost of effort, and the expected productivity of the agent's effort. Relationship-specific contracts raise the costs of forming contracts because a different contract must be designed for each principal-agent relationship. In practice, relationship-specific contracts are costly to implement in practice because they require detailed knowledge of the characteristics of the principal and agent. This is particularly a problem when the principal and agent are strangers and are not involved in long- term transactions. Moreover, relationship-specific contracts reduce flexibility by making it more difficult to switch to new transaction partners or to design auctions for contracts.

Finally, the economic model of agency relies exclusively on explicit contractual incentives and ignores the social, legal, and market contexts of the agency relationship. The principal creates a governance mechanism that provides the agent with ex ante incentives for performance. Because trust is assumed away, the written contracts have to describe every possible future contingency and associated payments to the agent. In practice, there are likely to be high transaction costs associated with the design, negotiation and enforcement of complete contingent contracts. Moreover, the economic approach does not apply to situations in which the principal-agent relationship does not rely on a formal contract [30].

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30. See Al-Najjar and Casadesus-Masanell (2001), for an investigation of the circumstances under which fully incomplete contracts are optimal. The paper introduces an agency model with moral hazard where sufficient trust and complexity imply that the optimal arrangement entails no formal written contract.

5. Discussion: Origins of the Economic Model of Agency

THE history of the economic model of agency sheds light on why the economic approach differs from the concept of agency in law and in business. The agent in economic analysis exerts effort and deals with things, not with persons, since the agent does not represent the principal in the transacting with third parties. The origin of the economic model of agency lies in the analysis of labor contracts in agrarian economies, most notably sharecropping (Otsuka, Chuma and Hayami, 1992: 30, 1965) [31]. The neoclassical economics view of the firm as manufacturer also influences the agency model, with the agent as a worker performing production tasks. Extension of the agency model to applications in which agents are managers, accountants, or salespersons has had little effect on the form of the model [32].

The different economic arrangements by which sharecropping and land tenancy are organized have drawn economists' attention for more than two hundred years. Economists' discussions of sharecropping help to explain why economists view agents as producers rather than as intermediaries, and also sheds light on the economic analysis of agency contracts. There are a number of standard alternative contractual arrangements that may exist between a landowner and a tenant farmer. The landowner can hire the farmer at a fixed wage, the farmer can pay a fixed rent to the landowner, or the farmer can pay the landowner a share of the agricultural production.

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31. Otsuka, Chuma and Hayami present a comprehensive overview of the literature that relates the existing theory of agency with an empirical examination of agrarian contracts.

32. The prototypical example in this literature is that of a sales-person. The employer (principal) cannot observe how much effort the sales-person (agent) devotes to promote and sell the product. What the principal can observe, though, is the number of units sold. It is reasonable to assume that on average the more units the sales-person sells, the more effort he is devoting to promote and sell the product. The optimal contract will specify a commission rate per unit sold. Note that the agent may get lucky: sales may be high for some exogenous reason not related to his effort to sell, for example, a competitor going out of business. Notice that the sales person devotes effort but does not engage in more complex activities such as negotiation, price setting, and binding the principal to contracts.

The system of sharing output between a land owner and a tenant is known as sharecropping of share tenancy. Fixed-rent tenancy was the dominant system in England while share tenancy or *metayage* was pervasive in France. Under fixed-rent tenancy the worker pays the owner of the land a fixed amount that is independent of the output actually produced. Under share tenancy rent is paid from the share of output produced from the rented land. Thus, the worker gets a proportion of the output he produces. Metayage literally means splitting in half.

Adam Smith (1776) and John Stuart Mill (1848) studied the relative merits of the different lease- hold systems employed in England and France (Mill, 1926 [1848]). Adam Smith identified the incentive effects of share tenancy in comparison with fixed rents. Smith observed that when the produce was divided equally between the proprietor and the farmer, the tenants "have a plain interest that the whole produce should be as great as possible, in order that their own proportion may be so" (Smith, 1998: 439-440). Yet Smith expressed distrust of share tenancy because he claimed that the tenant would be reluctant to employ his own capital on the farm: "It could never, however, be the interest even of this last species of cultivator to lay out, in the further improvement of the land any part of the little stock which they might save from their own share of the produce, because the lord, who laid out nothing, was to get one-half of whatever it produced" (Smith, 1998: 440). Share tenancy, while prevalent in France and lingering in some parts of Scotland, had been replaced in England by farmers paying a *rent certain* to the landlord. When farmers paying a fixed rent have a lease for a term of years, "they may sometimes find it in their interest to lay out part of their capital in the further improvement of the farm" (Smith, 1998: 441).

Alfred Marshall (1890) was the first to formalize the efficiency implications of each of the two contractual arrangements (Marshall, 1956 [1890]). As Marshall prophetically observed "There is much to be gained from a study of the many various plans on which the share contract is based" (Marshall, 1956 [1890]: 643, footnote 1). Like Smith, Marshall argues that fixed- rent leasehold tenancy is superior to share contracts. According to Marshall, if the tenant's work effort cannot be observed and monitored by the landlord, then share tenancy results in inefficient resource allocation because the worker receives only a fraction of his marginal cost of effort as his marginal revenue. Marshall's analysis effectively frames modern economic literature on contracts. His prediction that sharing of output results in inefficient effort is essentially the theme of moral hazard that pervades the economic theory of agency.

D. Gale Johnson (1950) models the incentives of the share cropper to devote labor to cultivation, noting that more than three-fourths of all

rented agricultural land is leased under share contracts. Johnson considers the effect of allowing the tenant to choose how much land to rent from the landlord and concludes that the alleged inefficiencies of sharecropping are mitigated or even eliminated (Gale, 1950: 58, 111-112). Steven N. S. Cheung adds that the landowner can enhance incentives for performance by the tenant by varying the allocation of land to tenants. Moreover, Cheung argues that the landowner and tenants also build trust due to long-term relationships since they have the choice of whether or not to renew their relationship each year (Cheung, 1969).

Perhaps the earliest version of the principal-agent model is given by Berhold (1971) who anticipates many of the major theoretical results in agency theory (Berhold, 1971: 85, 460-482. See also Berhold, 1967). He notes earlier work on wage incentive systems and on labor unions (Rubner, 1962; Clark, 1961: 6; Fellner, 1949). In Berhold's framework, a principal designs incentives to motivate an agent to make an *appropriate decision* (at 461). He restricts his attention to linear profit-sharing incentives composed of a fixed reward and a sharing ratio. Berhold derives the contract that maximizes the principal's profit such that the agent will accept the contract and the agent will make a decision based on the contract. Assuming that both the principal and the agent are risk averse. Berhold identifies the interaction between risk-sharing and performance incentives for the agent.

Although later than Berhold, the work of Stephen A. Ross is generally regarded as initiating the study of agency in economics, notably in the 1973 article "The Economic Theory of Agency: The Principal's Problem" (Ross, 1973: 63, 134 and 1973, reprinted in Balch, McFadden and Wu, 1974). Building on the ideas of sharecropping and labor contracts in agrarian economies, Ross lays the foundations of the general moral hazard economic model of agency. In technical terms, Ross's model is more general than Berhold's because he does not restrict contracts to linear incentive schedules. Ross correctly asserts that "an agency relationship exists between two (or more) parties when one of these, designated as the agent, acts for, on behalf of, or as representative of the other, designated the principal". However, Ross models only the bilateral relationship between the principal and an agent who exerts effort at some task [33]. The canonical moral hazard model of agency posed by

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33. Zeckhauser (1970) is perhaps the earliest introduction of a formal analysis of moral hazard, following earlier discussions by Mark V. Pauly (1968) and Kenneth J. Arrow (1970). He examines the choice of medical expenditures by patients who have an insurance policy that reimburses a proportion of expenditures (see also Spence and Zeckhauser, 1971: 61, 380-387; Pauly, 1968: 58, 531-537; Arrow, 1968: 58, 537-538).

Ross has the following form: the principal chooses a fee schedule to maximize her own expected payoff subject to the constraints that the agent must want to participate in the relationship (given his other opportunities) and that the agent must be willing to choose the action that is best from the principal's point of view. While assuming an absence of trust, Ross adds: "the problem of the fiduciary or the financial intermediary is fundamentally a problem in the theory of agency" (Ross, 1973, reprinted in Balch, McFadden and Wu, 1974, 216). The modern formal treatment of the principal-agent relationship is developed further in Holmstrom (1979) and Shavell (1979). See also the discrete state space treatment in Grossman and Hart (1983).

Not surprisingly perhaps, the formal economic model of principal and agent and the historical antecedent of the sharecropping example are quickly reunited in the economics literature. Stiglitz (1974) rationalizes the use of share contracts in a situation where the tenant's effort cannot be costlessly monitored as a risk sharing device: when the agent is risk averse, risk sharing between tenant and landlord may be beneficial. With a fixed wage rate, achieving efficiency requires that a worker's effort be perfectly monitored (Stiglitz, 1974: 41, 219) [34]. Interestingly, Stiglitz draws a parallel between sharecropping and modern corporation, noting that investors obtain a share of profits and the entrepreneur who establishes the firm also receives a share. Because the entrepreneur can divest the shares, it is necessary for the owners of the firm to devise more complex contractual arrangements to maintain incentives that avoid conflicts of interest and alleviate the effects of inside information available to the entrepreneur. The economic model of agency thus returns to its agrarian roots in sharecropping.

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34. A classic study of moral hazard by James A. Mirrlees (originally completed in October, 1975) states that the same issues arise in sharecropping, agency, incentive systems and pay structures, and capital markets (see Mirrlees, 1999: 3-21).

6. Extension: Introducing Trust and Governance Mechanisms into the Agency Model

THE model in the previous section examined how legal duties and the corresponding legal remedies introduce trust into the agency model. The basic model can be modified in a similar way to include social norms and market standards. The effects of these modifications are summarized in table 6.1.

TABLE 6.1: **Explicit and implicit incentives in agency**

		Explicit and implicit incentives for performance	Trust	Transaction costs
Contract	**Contract terms**	*Contractual incentives:* Rewards and penalties based on performance	Strict reliance on contract terms assumes absence of trust	High transaction costs of writing and monitoring complete contracts
Social Context	**Social norms**	*Social pressures:* Violating norms affects social status and conscience	Trust established by social pressures and personal ethics	Transaction costs lowered by social norms. Incomplete contracts
Legal Context	**Legal duties**	*Legal remedies:* Penalties for breach of duty and breach of trust	Agent is fiduciary: law defines a trust relationship	Transaction costs lowered because of law of agency
Market Context	**Market standards**	*Market remedies:* Penalties based on reputation, future transactions, access to market networks	Trust established by reputation and informal market networks	Transaction costs lowered because of market standards. Implicit contracts

Social norms set standards of behavior that encourage most agents to perform their duties of service and loyalty to principals. Social norms are also reflected in the codification and interpretation of the legal rules of agency. Suppose that in the preceding discussion, the agent may face pressure to conform to a social norm a^* for actions in serving the principal. If the agent faces social pressures that correspond to a penalty F for departing from the norm, then the agent will have an implicit incentive to conform to the social norm and the principal will have an incentive to trust the agent. As part of the social context, we include not only social norms but also personal ethics or beliefs.

Various social norms correspond to the duties of agents. For example, social norms that encourage hard work, loyalty and honesty reinforce the duties of the agent to act in the interest of the principal and to report truthfully to the principal. The presence of such social norms have two main effects on economic performance in agency contracts. First, they ensure that parties have proper incentives to perform even in the absence of explicit incentives. Second, such social norms contribute to the efficiency of the relationship because a reduced reliance on explicit incentives, such as bonuses or commissions, reduces the risk that must be shifted to the agent. Less reliance on risky payoffs reduces the need to compensate risk-averse agents for bearing risk, thus increasing the total benefit from the relationship. These benefits can be shared between the principal, the agent, and the third party (Casadesus-Masanell, 2004). Thus, norms enhance efficiency by allowing the principal-agent contract to use explicit contractual incentives that are *low-powered* rather than *high-powered*. For example, a contract consisting of a small fixed payment and 90% commission on sales provides high-powered incentives for an agent to increase sales effort. Instead, a contract consisting of a large fixed payment and a 10% commission provides low-powered incentives to increase sales effort because sales have little effect on the total payment [35]. The presence of social norms coupled with emotions of pride, shame, or guilt, provide incentives for agents to perform their duties, even though explicit monetary incentives are low-powered. Because social norms allow for low-powered incentives, the agent bears less risk and at the same time feels compelled to work hard. As a result, the total economic gains from the relationship are larger than in their absence.

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35. Explicit incentives are said to be *high-powered* when the wage is highly sensitive to some measurable and verifiable signal of agent performance, and *low-powered* when the wage does not depend much on performance (see, for example, Williamson, 1985: 140).

High-powered incentives may be desirable when measurable and verifiable signals for all of the dimensions to the agent's effort or attention are available. There are two countervailing effects associated to high-powered incentives. First, the agent is compelled to work harder. Because the agent will realize a large total payment if the values of the verifiable signals are large and the likelihood of them being large is positively correlated to his effort, he will be exert large effort or attention. As the agent increases his effort, there will be more surplus created. For example, if the agent is a salesman, the more effort he devotes to looking for and persuading customers, the larger will be the expected sales and total gains to the relationship. On the other hand, under high-powered incentives the agent will be bearing a substantial amount of risk because even if he works hard, there is some probability that the signals upon which his salary is based will turn out to be low. For example, the salesman may be unlucky and even if he tried very hard, low sales may accrue. In this case, if the salesman's full compensation comes from commission, he will end up with no wage at all. Thus, high-powered incentives expose the agent to substantial risk. As the agent's risk bearing increases, there is less surplus created and the agent needs be compensated by a proportionally high fixed payment in order to be persuaded to enter the relationship.

Market standards also can lead to trust between principal and agent. Suppose that the principal and agent are part of a market network. Even thought the principal and agent cannot write an explicit contract based on the agent's effort, market penalties can have the same effect. If the agent fails to conform to a market standard a^* then the agent may face exclusion from the market. Such exclusion can have the same effect as a legal remedy, *F*. The threat of exclusion from the network and the consequent loss of future profit induce agents to act in a trustworthy fashion (Greif, 1989: 49, 857-882 and 1993: 83(3), 525-548).

The size of the network of business relations is also a crucial aspect impacting reputation building. The larger the network, the more the potential punishment from exclusion from access to the network (Greif, 1989: 49, 857-882, 1993: 83(3), 525-548 and Greif, Milgrom and Weingast, 1994: 102(4), 745-776). The greater the returns to creating trust through market networks, the larger will be such networks for similar costs to organizing networks. In addition, lower costs of communication make it easier to publicize the parties' performances to potential future transacting parties. This increases the likelihood that violation of market standards will be penalized. If every potential transacting party were fully aware of each other's complete history of past interactions, reputation would be enough for honest behav-

ior to emerge and there would be little need for social norms and the legal system [36]. Another feature of market relationships that promotes cooperation is frequency of interaction. The more frequently the parties meet, the more quickly a reputation for honesty can be built [37]. Effectively, frequency of encounters translates into a larger discount factor and thus in a larger weight of future business relationships relative to immediate transactions [38].

Individuals have incentives to build reputations when they interact repeatedly and their behavior is observable [39]. Repeated interaction creates incentives for individuals to report information truthfully and to build reputations for honesty [40]. Agents that repeatedly enter into a relationship with a principal have increased incentives to behave cooperatively [41]. A number of circumstances foster the establishment of good reputations as the equilibrium of the repeated interaction game. The dynamic nature of the relationship allows for future punishments and rewards to discipline present behavior. A real estate broker acting as a buyer's agent may expect to meet that buyer-principal in the future when she decides to sell the house. To some extent, the threat of future business loss regulates the broker's present behavior. Individuals cooperate in the short run because there are expected *future* gains from cooperation.

There are a number of factors that motivate the agent to develop a reputation for integrity and truthfulness. First, the more *patient* are the parties in the agency relationship, the greater are the agent's incentives to build a

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36. Kandori (1992: 59, 63-80) extends the Folk theorem in repeated games to a setting where the agents change partners over time. Cooperation is sustained because defection against one agent causes others to punish.

37. Smith (1978: 538-541) points out that: "A dealer is afraid of losing his character, and is scrupulous in observing every engagement. When a person makes perhaps 20 contracts in a day, he cannot gain so much by endeavouring to impose on his neighbours, as the very appearance of a cheat would make him lose. Where people seldom deal with one another, we find that they are somewhat disposed to cheat, because they can gain more by a smart trick than they can lose by the injury which it does their character".

38. Note that if the interest rate is r, then the discount factor equals $1/(1 + r)$.

39. Beginning with the work of Robert Axelrod on the nature of cooperation and Clive Bull on self-enforcing implicit contracts, there has been growing interest in economics and political science on reputation building and its effects (Axelrod, 1984; Bull, 1987: 102, 147-160. See also Kreps, 1990; Radner, 1981: 49, 1127; Fudenberg and Levine, 1989: 57, 759 and 1992: 59, 561).

40. The main analytical tool used in this literature is that of infinitely repeated games (or supergames) where a given stage game is repeated *ad infinitum*. A stage game is generally a model of a static competitive situation. The elements of a stage game are: players, actions or strategies, and outcomes. The payoffs to anyone player depend on the actions of the player and all or some of the other players. A supergame consists of infinitely many repetitions of the stage game.

41. The first dynamic model of economic agency was published by Roy Radner (1981: 49, 1127).

reputation for trustworthiness. Because the gains associated to having a reputation for honesty are realized in the future, the more patient are the parties, the more faithful will their short term behavior be. Patience or lack thereof is intimately related to the discount factor used by individuals to compute the net present value of future streams of cash flows. With a large discount factor, distant future transactions are very present in the mind of the agent. It is this vivid presence of the future that bends present behavior towards honesty. On the contrary, a low discount factor translates into myopic behavior –narrow-minded maximization of short term gains without regard to future returns.

Second, the more there is *information transparency*, that is, the less scrambled are the signals from which specific actions are inferred, the easier it is to punish misbehavior and to build a reputation [42]. If the principal and third parties with whom the agent transacts are specialists on the agent's task, then it is easier for the agent to build a reputation than if the other participants knew little about his work and thus could not reliably infer the agent's actions from the observed outcomes. Thus, it is easier for a lawyer agent to build a reputation for honesty if his clients are other lawyers than if they know nothing about law and what they should expect from the agent-lawyer. For economic pressures to enforce market standards, the acts of the participants must be reasonably easy to observe but not necessarily verifiable; that is, situations where the principal and third parties can observe or can easily infer the agent's acts, even if they would have a hard time proving breach of contract in court.

Third, the *relative rewards* from defection and compliance affect the willingness of agents to cooperate with principals. The lower the immediate benefit from defection, the less the incentives to take advantage of agents, principals, and third parties. Likewise, the larger the future benefits from having built a reputation, the larger the incentives not to defect in the short term.

The parties compare the material rewards from behaving cooperatively with the immediate pecuniary benefits of defection [43]. The notion of a

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42. There is a sizable economic literature on repeated games with imperfect monitoring. See, for example, Abreu, Pearce and Stacchetti, 1990: 58, 1041-1063; Green and Porter, 1984: 52, 87-100; Fudenberg, Levine and Maskin, 1994: 62, 997-1039.

43. A drawback with the game-theoretical literature on reputation building is *multiplicity of equilibria*. The model identifies the factors that ultimately determine the agent's incentives to behave honestly (patience, information transparency, advertising technology, frequency of interaction, and relative rewards), but does a poor job at predicting the sequence of actions that parties will take as well as the more likely equilibrium outcomes. If the parties are sufficiently patient, *every-*

market standard must be extended to include the equilibrium strategies of the dynamic game that parties play against each other. As we mentioned previously, market standards are actions that the members of the network regard as trustworthy behavior. In contrast, the equilibrium strategies in the dynamic game are *sequences* of actions, contingent plans of action. The self-enforcing equilibrium strategies should also be regarded as market standards themselves because they constitute the dynamic behavior that parties expect from each other in the course of the agency relationship (and this is the definition of a market standard). Notice that the equilibrium strategies may prescribe actions that by themselves would not be deemed as honest behavior but that in the context of the dynamic game are perfectly acceptable. The punishment phase in the self-enforcing equilibrium path (what the principals and third parties are supposed to do if there is deviation from 'honest' behavior by the agent) will typically consist of acts that go against the short-term, myopic general interest. However, both, individual actions and market strategies are market standards. Market networks foster the materialization of market standards and that when the agents' acts can be observed reasonably accurately, the threat of exclusion induces them not to neglect their duties vis-a-vis the principal and third parties.

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thing is an equilibrium of the dynamic game. Almost any feasible payoff allocation that give the parties at least what they could get against the worst punishments that the other players could use against them can be achieved in an equilibrium of a standard repeated game. Thus the lack of predictive power. In a sense, supergame theory is *too successful* at explaining cooperation. The multiplicity of equilibria is usually referred to as the *Folk Theorem* (see Friedman, 1971: 28, 1 and 1977; Aumann and Shapley, 1976; Rubinstein, 1979: 21,1; Fudenberg and Maskin, 1986: 54, 533). In the last few years there has been work on refining the equilibrium concept to narrow the set of predictions, but the work on coordination and focal equilibria is still at a very early stage (see, for example, Fudenberg and Levine, 1989: 57, 759 and 1992: 59, 561).

7. Conclusions

OUR discussion shows that the legal, social, and market contexts of agency relationships provide incentives for agents to perform their duties of service and loyalty. These exogenous incentives permit delegation of authority allowing agents to act as intermediaries. Moreover, these exogenous incentives provide the context for any explicit incentives for performance offered by the principal to the agent. The law of agency spells out the duties of agents and the remedies for breach of duty that induce most agents to serve the interests of principals and to report information truthfully. Social norms provide general standards of behavior that may not lend themselves to observation and enforcement by courts. Markets provide more specific standards of behavior that are enforced by reputation effects and admission to market networks. These three forces improve efficiency by reducing the transaction costs of agency.

Our analysis resolves the puzzle of why fiduciary standards differ across legal doctrines. In corporate law, for example, where market forces predominate in motivating managers, such as the market for executives and the market for corporate contract, there is correspondingly less emphasis on explicit incentives, social norms or legal remedies. Here we see deference to managers under the business judgement rule. In the case of sales agents or purchasing agents, there is greater emphasis on explicit incentives such as commissions and market pressures to perform, and correspondingly less reliance on social norms and legal remedies. Trustees who manage assets for beneficiaries are held to high legal standards of loyalty and care since there is relatively less scope for explicit contractual incentives and market forces to encourage trust. In the case of family relationships, including acting for a relative under power of attorney, social norms dominate incentives, since explicit incentives and market forces do not apply.

More generally, our analysis resolves the puzzle of why there are social, legal, and market incentives when the parties can rely on explicit contractual incentives. By the very nature of agency, monitoring is costly and detecting a breach of duty is imperfect. Even if a breach of duty is detected by a principal, it can be difficult to establish legal proof of negligence or malfea-

sance. Legal rules such as compensation or disgorgement limit the agent's liability so that expected penalties create inefficient incentives. Limited liability of agents complicates legal remedies, so that social and market sanctions serve to strengthen remedies. Moreover, legal remedies entail legal fees, court costs and other transaction costs. Social and market sanctions can be brought to bear even if legal remedies are not available or desirable. Conversely, social pressures are imperfect due to their informal nature. Also, market penalties may be limited for some agents who are not seeking repeat business or not concerned about their reputation. For a significant breach of duty, legal remedies provide sanctions where social and market pressures are less effective.

Finally, explicit contractual incentives have substantial limits. Some types of agency relationships do not involve formal contracts. When agency involves contracts, there can be substantial transaction costs of writing contingent contracts. Substantial reliance on explicit incentives can shift risk to agents, requires principals to compensate agents for the risk that they bear. Reliance on explicit incentives requires costly monitoring and evaluation of performance. By relying in part on exogenous incentives, principals and agents can simplify the process of forming the relationship and reduce the need for monitoring performance. Accordingly, principals may choose to limit explicit contractual incentives for performance, relying instead on the legal, social and market context. One might argue that an ex post penalty as in law has a deterrence effect as therefore is equivalent to an ex ante incentive schedule as studies in economics. However, the qualitative difference is important. In economic theory, the agent is assumed not to be trustworthy in the absence of explicit incentives. However, the law provides remedies to the principal and corresponding penalties to the agent if the agent does not behave in trustworthy fashion. The incentive deriving from the legal penalty is presumably only binding some of the time if agents tend to behave in a trustworthy fashion, while in the economic model of agency explicit incentives are necessarily binding on the rational agent. Thus, the difference is more than that between the carrot and the stick, because some agents would choose to perform their fiduciary duties even in the absence of the potential penalty.

The economic approach has generated controversy regarding the definition of agency in law. Some legal scholars have questioned whether the fiduciary nature of the agent should be part of the legal definition. Cooter and Freedman observe that "Fiduciary Relationships have occupied a significant body of Anglo-American law and jurisprudence for over 250 years, yet the precise nature of the fiduciary relationship remains a source of confu-

sion and dispute" (Cooter and Freedman, 1991: 66, 1045). Agents are fiduciaries but the notion of a fiduciary is too broad to precisely define agency [44]. Our analysis suggests that the role of trust in agency can be formally specified in a manner consistent with the legal requirement that agents are fiduciaries. The economic and legal frameworks should be consistent.

Economic discussions of agency generally have neglected the duties of service and loyalty. Economic models of agency, by focusing on productive effort and revelation of information, have tended to miss the role of agents as representatives and decision makers. Even if payments to agents are not tied explicitly to performance, implicit incentives for trust often motivate agents to act in the interests of principals. Our analysis demonstrates that, even with fixed payments, agents may provide efficient levels of effort and communicate information truthfully. The influence of economic models of agency should be tempered by recognizing that contract design without the legal, social and economic contexts is unlikely to resemble contracts in practice. Models of agency that neglect implicit incentives are likely to be a faulty guide for courts, legislatures and regulatory agencies. Economic models can generate more accurate predictions by integrating the legal, social, and market contexts of agency contracts.

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44. Easterbrook and Fischel point out that "The many agency relations that fall under the 'fiduciary' banner are so diverse that a single rule could not cover all without wreaking havoc" (see Easterbrook and Fischel, 1993: 36, 425). Deborah A. DeMott finds that fiduciary obligation is one of the most elusive concepts in Anglo-American law (DeMott, 1988: 879).

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