The Problem of Contingency Verification and the Role of the Court

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Abstract

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Recent literature on incomplete contracts attributes noncontractibility of certain contingencies to their unverifiability. This paper questions the validity of the theory. We argue that the court need not observe relevant contingencies with the same degree of accuracy as the contracting parties in order to enforce a contingent contract. Moreover, the cost of contingency-verification may not materialize in equilibrium. In a simple procurement model, we show that as long as the court’s ruling is not arbitrary, it can in effect serve as a contracting proxy. As a result, the first-best outcome can, under certain ideal conditions, be implemented by a contingent contract even if contingencies are costly to verify and the verification is imperfect.
1 Introduction

In recent years an increasing number of articles, notably Grossman and Hart (1986), Hart and Holmström (1987), and Hart and Moore (1988), have studied the causes and consequences of incomplete contracts. The literature has attributed the incompleteness of contracts to unverifiability. Unverifiability refers to situations in which some of the relevant contingencies are only observable to the contractual parties but not so to a third party (e.g., the court). To quote Hart and Holmström (1987), "Incompleteness (of contracts) arises because states of the world, quality, and actions are observable (to the contractual parties) but not verifiable (to outsiders)." The literature concludes that any contract based on unverifiable contingencies cannot be enforced and is necessarily ineffective. The concept of unverifiability has been extensively applied to explain, among other things, the nature of the firm (Grossman and Hart, 1986; Hart and Moore, 1990) and the capital structure puzzle (Aghion and Bolton, 1992).

The underlying assumption of the incomplete contracts theory appears to be that the court needs to observe relevant contingencies with the same degree of accuracy as the contracting parties in order to enforce contingent contracts. The problem with this assumption is that, unless contracting parties are naive, all contracts would be contingent only on public (hence verifiable) information. But, then, contract enforcement would be a straightforward and trivial matter. It would always be clear whether a contract is breached and who is responsible for the breach. The parties, then, would know that the court would enforce the contract as it is if any dispute is
brought to the court. Given that litigation is costly, we would not have seen much of contract dispute in court. In fact, there would be no dispute to start with because a disputable contract would never have been signed in the first place.

We believe that the literature has adopted too passive a view on the role of the court. In reality, the court does not just passively enforce contractual agreements that are clearly laid out. More often than not, the court plays an active role in resolving contract disputes. For example, the court may provide noncontractual remedies when certain contingent provisions are missing in a contract or when some clauses are not clearly spelled out. The court may also modify contracts that are not written appropriately.

In this paper, we will, first, argue that unverifiability as defined in the existing literature is a misleading concept and suggest a more realistic scenario in which verification of contractual contingencies is costly and imperfect. We then show how court, the very source of the verification problem, can play an active role in such a scenario by enforcing a contingent contract in a non-arbitrary way. In a simple procurement model, we show that the cost of verification need not be born in equilibrium when a pre-verification renegotiation is allowed. Imperfect verification may give rise to a mistaken court's ruling. But it may not pose a problem as long as the court's ruling is not arbitrary in a sense that will become clear later, providing that the contracting parties take this fact into account when they design their contract. We show that the court's ruling can, in effect, serve as a contracting proxy in the presence of difficulties in contingency verification.
The rest of the paper is organized as follows. Section 2 provides a conceptual discussion of the verification problem and paves the way for the subsequent analysis. Section 3 presents a simple procurement model. In Section 4, we show how the court's ruling can serve as a contracting proxy. We prove that, under certain conditions, the first-best outcome can be implemented by a contract contingent on the quality of the traded good that is difficult to verify if the contracting parties hold the same opinion on how the court would possibly make decisions in case a dispute is brought to the court. We also prove that the first-best quality can still be implemented in the case of different opinions, but costly litigation may occur in some situations. Section 5 concludes the paper with remarks on future research and points out how the model can be used to study the trade-off between contingent and non-contingent contracts.

2 The Verification Problem

In the existing literature, unverifiability is defined as arising when there is an asymmetry of information between the contracting parties and a third party (e.g., the court). In other words, a contingency is unverifiable when it is observable to the contracting parties but not so to the court. A literal interpretation of this definition would imply that almost nothing is verifiable because, after all, the court cannot be expected to observe as much information on practically anything as the contracting parties. It also seems to suggest that the court cannot reach a verdict on a contract dispute unless it knows the whole truth. This is certainly unrealistic.
To be sure, the concept of unverifiability is meant to be an abstraction that reflects the fact that it is often very difficult for disputing parties to verify certain information to the court. But this fact does not necessarily lead us to conclude that the parties should therefore not contract on information that is difficult to verify.

Difficulties in contingency verification only imply that the verification process may be costly and the result may be imperfect. In most cases, the court cannot possess as much information as the contracting parties about relevant contingencies even if some effort of verification is exerted, but neither is it necessary for the court to know that much to enforce a contingent contract. When a dispute is brought up, the court may often not be able to observe clearly and in a costless fashion the actual realization of certain contingencies or fully understand the technical details of the contract. The contracting parties on the other hand may not be able to show what exactly has happened before the court. However, it is flawed to say that the court would then have nothing to say and cannot make any judgment in the case of a contract dispute. In practice, the court does not need to have as much information as the disputing parties to make a ruling. Verdicts are often reached based on available, although limited, evidence and contracts are then enforced in a way the court thinks appropriate. Although the court’s ruling can be mistaken and the actual terms of trade thus enforced by the court may differ from that stipulated in the initial contract, contracting parties can take this fact into account when they design their contract.

Moreover, the cost of information verification need not materialize if the parties
can privately settle their dispute through a pre-verification (or pre-trial) negotiation. What the parties need to understand is how the court would rule on the case if they eventually go to the court and incur a verification cost. The expected decisions by the court would then become the status quo in their negotiation for a private settlement.

Therefore, efficiencies can be improved by a contingent contract even if relevant contingencies are costly to verify and the verification is imperfect. The extent to which efficiencies can be improved depends on how the court rules in such situations.

To be specific, let us briefly consider a simple procurement problem that will be formally analyzed later. A buyer needs one unit of a good that can be produced by a supplier. The buyer's valuation and the seller's production cost of the good depend on the quality of the good. Suppose the good is specific for the buyer's use and has no outside value. If no binding contract is in place before the good is produced, the seller may not be able to capture appropriate gains in the ex post negotiation unless he has enough bargaining power. Anticipating the opportunistic behavior by the buyer, the seller may not have incentives to produce the good in the first place. Therefore, it is often necessary for the parties to write a binding contract that specifies the terms of trade before production\(^1\).

\(^1\)This problem is analogous to, but different from, the holdup problem with asset specificity as studied by Klein et al. (1978) and Williamson (1985). Here we have a principal-agent problem with product specificity.
sense that is used in the literature, then a contract contingent on these variables will not be enforceable. Consequently, it is impossible to achieve the first-best outcome because, by definition, a variable or a contingency is not contractible if it cannot be verified to the court\textsuperscript{2}. In this paper, we adopt a different perspective on the problem. We note that even if the quality (or any other variable) may be difficult to verify in the sense that verification is costly and imperfect, an incentive contract contingent directly on the quality may nevertheless be effectively enforceable. The key observation is that the court does not have to observe with perfect accuracy what exactly the quality is when the dispute is brought to the courtroom. The court may try to acquire some information and make a judgment on the dispute and enforce the contract in a way it thinks appropriate. For example, the court may ask each party to present their evidence on the quality of the good and call in experts to testify. The court then makes its judgement on the quality of the good and enforce the contract as if the quality is perfectly observable. As going to the court and verifying the quality is a costly procedure, the parties have incentives to renegotiate to a private settlement with the outcome out of the procedure as their bargaining status quo. We can show that under conditions such as unlimited liability and efficient renegotiation, the first-best quality can be implemented by a

\textsuperscript{2}In the context of the holdup problem with specific investments, some authors (Aghion et al., 1994; Chung, 1991; Edlin and Reichelstein, 1996; Hermelin and Katz, 1993) take unverifiability as given and show that the first-best outcome can be achieved by simple contracts. In our example, a simple, noncontingent contract will only induce the production of a low-quality product.
contract contingent on the quality of the good.

Some might want to interpret our approach as the one in which the court observes a public but noisy signal that is correlated with the underlying variable. But then the contract can be contingent on this publicly observable signal. In reality, however, what the court would observe can be very complicated, subtle and multidimensional. For example, the court may need to use expert testimonies, which would be impossible for the parties to contract upon in advance. Therefore, it is even more difficult to contract on the “signals” that the court may observe than on the quality directly. Given a contract contingent on the quality, however, the court may gather relevant information and try to determine the quality of the good produced and then enforce the contract as if the quality is verifiable in the usual sense. In other words, the parties are, to the effect, contracting on the court’s ruling by directly contracting on quality. The court’s ruling can be mistaken and the information it acquires may be noisy. But as long as the ruling is somehow correlated with the underlying variable, efficiencies can be improved with a direct contract. Formally, the result is easy to understand when we think of the contract as being in effect contingent on a correlated signal. It is a standard result in the principal-agent literature that any action can be implemented when there is a signal that is correlated to the action. One insight of the paper is that it is the court’s ruling itself that serves as a signal or a contracting proxy.

We hasten to point out that we are not defining the problem of unverifiability away. As we argued before, a literal interpretation would suggest that, since the
court can hardly know as much as the contracting parties, nothing is verifiable. Another interpretation of unverifiability is that it is impossible for the disputing parties to convey any information to the court so that the court can make any meaningful and relevant inference about the dispute. But then, this is an extreme case and empirically may not be significant. Therefore, we conclude that the problem of verification is a matter of degree and cost rather than an all-or-nothing scenario. But then, first, it is not necessary for the court to have all the information; and second, the verification cost may not have to be born in equilibrium.

3 The Model

Consider a simple procurement model. A buyer needs to buy a unit of a good. The buyer's valuation $V$ and the supplier's production cost $C$ of the good depend on the quality of the good $q$. The quality can either be high $(h)$ or low $(l)^3$. Let $V_q$ denote the value of the good to the buyer and $C_q$ the cost to the seller when the quality is $q \in \{h, l\}$. Suppose $V_h > V_l$, $C_h > C_l$, and $V_h - C_h > V_l - C_l$. For ease of notation, we assume both the buyer and the supplier of the good are risk-neutral. We will comment later that this assumption is not essential to our result. We also assume that the good is specific for the buyer's use and has no outside value. If no contract is signed in advance, there may not be any supplier willing to produce the good because ex post bargaining may hurt the supplier. There are potentially a lot

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3Our result can be easily extended to the multiple quality case.
of identical suppliers who can produce the good at the same cost. Thus, the buyer has the power to offer any supplier a take-it-or-leave-it contract. All three relevant variables \( V, C, \) and \( q \) are observable to both the buyer and the seller but are difficult to verify to the court in a sense that verification is costly and imperfect.

Although a contract contingent on the quality of the good can be signed, the problem of verification may leave room for dispute. Consider a trading contract \( P = (P_h, P_l) \), which stipulates the transfer payment from the buyer to the supplier contingent on the quality of the good. The rule of the game is as follows. First, the buyer proposes a take-it-or-leave-it contract \( P \) to a supplier. After the contract is signed by both parties, the supplier chooses a quality level \( q \) and incurs a cost \( C_q \). After production, they may trade in accordance with the contract. If a dispute arises after the production of the good, the initial contract can be renegotiated. At the renegotiation stage, the buyer again makes a take-it-or-leave-it offer \( T^a \). If the seller rejects the new offer, they need to go to the court for settlement.

If the parties must go to the court to settle their contract dispute, they have to incur a cost to verify to the court the quality of the good. Without loss of generality, we interpret this cost as the litigation cost including, for example, the attorney's fee. We assume that once they enter into a litigation, each party has to bear a fixed amount of cost, which we denote \( L^a \) and \( L^b \) for the seller and the buyer respectively.

\[ \text{If the seller has all the bargaining power, the case is trivial. A similar analysis can be done for cases in which the buyer and the seller has the same bargaining power.} \]

\[ \text{Here we implicitly assume that the American rule for allocating litigation cost is used.} \]
We stylize the role of the court as follows. When a dispute on the contract is brought up, the court will attempt to identify the quality of the good that is produced. Then, the seller will be ordered to deliver the good at price $P_l$ if the court rules that the quality is $l$, or at price $P_h$ if the quality is determined to be $h$. As we pointed out earlier, verification is not perfect. Therefore, the court’s ruling based on imperfect verification is subject to error. So we model the court’s ruling as a probability vector $(f_h, f_l)$, where $f_h$ (and $f_l$) denotes the probability that the court rules that the quality is good when the actual quality is $h$ (and $l$). We call it the court’s technology. For simplicity, it is assumed to be exogenously given. In other words, the court is impartial and cannot be influenced by either party; and its decision is solely dependent upon what the underlying true quality is. In addition, the court is assumed to be unsophisticated and does not try to know what game is played by the two parties.

The court’s technology can be interpreted either as a vector of objective probabilities or the parties’ subjective beliefs. The parties may or may not hold the same
belief about the court’s ruling. We consider both cases in next section.

Lastly, we add two essential assumptions that both the buyer and the seller have enough wealth to bear unlimited liability, i.e., there is no bound imposed on $P_h$ and $P_l$, and that the pre-trial renegotiation is costless and efficient.

4 The Court’s Ruling as Contracting Proxy

4.1 The Case of Common Beliefs

We first consider the case in which the parties hold the same opinion on the court’s ruling, i.e., both parties believe that the court’s technology is $(f_h, f_l)$. The other way to say this is that $(f_h, f_l)$ is common knowledge.

When $P_h = P_l$, the contract is not contingent on quality. With a noncontingent contract, the seller's payoff does not depend on the quality of the good. Therefore, the seller will always produce a low quality good.

Suppose that the buyer offers a contingent contract $P = (P_h, P_l)$ in which $P_h \neq P_l$. After the good is produced, the initial contract is subject to renegotiation. Since the buyer is assumed to have the bargaining power to make a take-it-or-leave-it offer, the final payment $T_q$ given the quality $q$ depends on what the seller would receive in the court, minus her legal cost $L^s$. The seller can only expect to receive a payoff net of her litigation cost $f_qP_h + (1 - f_q)P_l - L^s$ if they resort to the court to settle their dispute. The buyer will offer a $T_q = f_qP_h + (1 - f_q)P_l - L^s$ that will make the seller exactly indifferent between accepting it and rejecting it. Anticipating
that her actual payment will be \( T_q \) depending on the quality of the good, the seller will choose \( h \) if and only if \( T_h - T_l \geq C_h - C_l \), or \( f_h P_h + (1 - f_h)P_l - L^* - C_h \geq f_l P_h + (1 - f_l)P_l - L^* - C_l \).

When \( f_h = f_l \), it means that the court's estimation of quality is independent of the true quality. In this case, \( T_h = T_l \). It would be impossible to induce the first-best quality. In other words, the cases where the first-best outcome is not possible are those where the court has absolutely no clue as to how to decide on a verdict on quality other than throwing a dice. The concept of unverifiability appears to apply only to such extreme cases.

Now suppose \( f_h \neq f_l \). To induce the seller to produce a high quality good, the contract has to be such that

\[
P_h - P_l \geq \frac{C_h - C_l}{f_h - f_l}.
\]

This is the incentive compatibility constraint on the contract. In addition, the seller’s participation constraint has to be satisfied. We normalize the seller’s reservation utility level to be zero. The participation constraint becomes

\[
f_h P_h + (1 - f_h)P_l - L^* \geq C_h.
\]

The buyer’s net payoff is \( V_h - [ f_h(P_h - P_l) + P_l - L^* ] \). Clearly, the buyer will choose \((P_h, P_l)\) such that \( f_h P_h + (1 - f_h)P_l - L^* = C_h \). There exist an infinite number of contracts that satisfy both (1) and (2) and, in the mean time, maximizes the buyer’s net payoff. One such contract has \( P_l = (C_h + L^*) - f_h(C_h - C_l)/(f_h - f_l) \) and \( P_h = (C_h + L^*) + (1 - f_h)(C_h - C_l)/(f_h - f_l) \). We summarize the above result
in the following proposition.

**Proposition 1.** Suppose \( f_h \neq f_i \). If contract renegotiation is costless and efficient and the contracting parties have a common belief on the court's technology, then there exist contracts contingent on the quality of the good that implement the first-best outcome. Furthermore, there will be no litigation in equilibrium.

The above analysis essentially says that as long as the court does not throw a dice in its ruling and the court's technology is common knowledge, the parties can always sign a contingent contract that achieves the first-best outcome.

The reasoning behind the result is quite straightforward. The parties are, to the effect, using the court's decisions as contracting proxies which are correlated with the underlying quality level, although this is achieved by contracting directly on quality. The implementation of the first-best outcome is a standard result in the principal-agent literature (see, for example, Fudenberg and Tirole, 1991, Chapter 6).

The result can be easily extended to the case in which both the buyer and the seller are risk-averse provided that the buyer's utility function is separable in monetary payoff and the benefit of consuming the good and, similarly, the seller's utility function is separable in monetary payoff and the cost of producing the good. This is because when renegotiation is allowed, they can always reach an efficient pre-trial settlement to avoid the uncertainty resulting from the court's ruling. This

4.2 The Case of Different Beliefs

The assumption that the court’s decisions are common knowledge among the contracting parties is certainly unrealistic. In reality, it is more likely that the parties may disagree on how the court reaches its decision. In this subsection, we show that differences of opinion on the court’s ruling may not affect our conclusion that the first-best quality can be implemented by a contingent contract, providing that the different beliefs themselves are common knowledge. But it is possible that the parties may not be able to agree on a private settlement and hence they will have to go through a costly litigation to settle their dispute.

To model differences of opinion, we assume that the buyer believes that with probability $F_h$ that the court would rule that the quality is $h$ if the quality is indeed $h$ while the seller’s belief on such a ruling is $f_h$. But both parties agree that with probability $f_l$ that the court would rule that the quality is $h$ if the quality is $l$. Without loss of generality, we assume that $F_h > f_l$ and $f_h > f_l$. In other words, we assume that both parties believe the court would be more likely to rule that the quality is $h$ if the quality is indeed $h$ than if the quality is $l$.

We assume that $F_h$ and $f_h$ are common knowledge. In other words, we assume that the parties can agree to disagree. Robert Aumann’s (1976) result on the im-

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7For this case, $f_h$ and $f_l$ should not be interpreted as correct beliefs (or objective probabilities). What are the objective probabilities are of no importance for our analysis.
possibility to agree to disagree relies on strict conditions that are often not met in reality. It hardly needs any justification to say that people often hold different opinions and the differences are almost impossible to be eliminated. A more realistic possibility is that the parties may be uncertain about the other's belief. That is, \( F_h \) and \( f_h \) can be private information. This is a possible cause for inefficiency, but this case has to be left for future research.

Suppose that the buyer offers a contingent contract such that \( P_h > P_l \). After the good is produced and the quality is \( q \), the seller would insist on a payment from the buyer no less than \( f_q P_h + (1 - f_q) P_l - L^s \), which is what he expects to receive if they have to go to the court to settle their dispute. The buyer knows that if they go to the court, her expected payment plus the litigation cost would be will offer be \( F_q P_h + (1 - F_q) P_l + L^b \).

First, we consider the case in which \( F_h > f_h \). This means that the buyer is more optimistic than the seller that the court would reach a correct decision. In this case, the buyer would expect to pay more if they go to the court than if they reach a private settlement because \( F_q P_h + (1 - F_q) P_l + L^b > f_q P_h + (1 - f_q) P_l - L^s \). Therefore, she would offer the seller a payment \( T_q = f_q P_h + (1 - f_q) P_l - L^s \) that will make the seller exactly indifferent between accepting it and rejecting it. Employing the same logic used before, we can show that the sufficient and necessary condition to induce the seller to produce a high quality good is, again,

\[
P_h - P_l \geq \frac{C_h - C_l}{f_h - f_l}.
\]  

In addition to the incentive compatibility constraint, the buyer will choose
\((P_h, P_l)\) such that \(f_h P_h + (1 - f_h) P_l - L^s = C_h\) to induce the seller's participation. Again, there are an infinite number of pairs of prices that satisfy the two constraints. The buyer's expected net payoff thus becomes \(V_h - C_h\). In other words, when \(F_h > f_h\), the result is the same as in the case of common beliefs when \(F_h = f_h\).

Next, we consider the case in which \(F_h < f_h\). This means that the buyer is less optimistic than the seller in her belief that the court would reach a correct decision. In this case, it is likely that they will have to go to the court to settle their differences. Suppose the quality is \(h\). In the pre-trial negotiation, the maximum amount the buyer is willing to pay the seller is \(F_h P_h + (1 - F_h) P_l + L_h\), i.e., her expected payment after a court's ruling plus the litigation cost. The seller, on the other hand, would expect from the buyer nothing less than \(f_h P_h + (1 - f_h) P_l - L^s\). Therefore, they cannot agree on a private settlement but must go to court if \(F_h P_h + (1 - F_h) P_l + L_h < f_h P_h + (1 - f_h) P_l - L^s\), or,

\[
P_h - P_l > \frac{L_h + L^s}{f_h - F_h}.
\]

(4)

In this case, the buyer believes that the payment the seller asks for in a private settlement is too high.

From the seller's point of view, his expected payoff depends on the court's decision and her choice of quality. Thus the incentive compatibility constraint is

\[
P_h - P_l \geq \frac{C_h - C_l}{f_h - f_l}.
\]

(5)

The seller's participation constraint requires that \(f_h P_h + (1 - f_h) P_l - L^s \geq C_h\), or

\[
P_h - P_l \geq \frac{C_h + L^s - P_l}{f_h}.
\]

(6)
The buyer's expected net payoff is $V_h = [F_h(P_h - P_l) + P_l + L^h]$. If $P_l$ is unbounded below, then it is clear that the buyer would choose $P_l$ as small as possible and $P_h - P_l$ to satisfy the above three inequalities (4), (5) and (6). The buyer’s expected payoff will then be unbounded. This is because the buyer has a different opinion on the court’s ruling and believes herself to be right, and hence she wants to exploit the seller for his “wrong” belief. In reality, there may be a wealth constraint on the part of the seller. The seller’s wealth will impose an upper limit on the buyer’s rent. Suppose that $P_l \geq -M$, where $M$ is a sufficiently large positive number representing the seller’s liability. It then can be easily verified that the buyer would choose $P_l = -M$ and $P_h - P_l = (C_h + L^* + M)/f_n$, which will satisfy (4) and (5) because $M$ is large. The buyer’s net payoff will be $V_h - C_h + \frac{L^*}{f_h}(C_h + M) - \frac{L^*}{f_h}L^*$. Whether the additional rent, $\frac{L^*}{f_h}(C_h + M) - \frac{L^*}{f_h}L^*$, will be materialized or not depends on how correct the buyer’s belief is. But in any case, the first-best quality will be implemented. This outcome is, of course, not efficient because the litigation cost $L^h + L^*$ incurred is socially wasteful. The above result is summarized in the following proposition.

**Proposition 2.** When two contracting parties have different opinions on the court’s decisions, there exists a contingent contract that implements the first-best quality as long as the parties' opinions themselves are common knowledge. But socially wasteful litigation will occur when $F_h < f_h$. 

17
5 Concluding Remarks

In this paper, we argue that unverifiability is a misleading concept that attempts to capture the idea that information verification is costly and imperfect. We then show that the parties can often improve their welfare by contracting on contingencies whose verification is costly and imperfect as long as the court can, with limited information, make a ruling that is not completely arbitrary. If contracting parties understand how the court may make decisions when their dispute is brought to the court, they can improve their well-beings by writing a contingent contract ex ante and renegotiating it ex post in a way that takes the court's ruling into account. The somewhat surprising result is that the court's ruling itself can in effect serve as a contracting proxy and enable a contingent contract to implement the first-best outcome under certain ideal conditions such as unlimited liability and efficient renegotiation. This result calls into question the significance of unverifiability in explaining contractual incompleteness.

Our result will not hold in general, however, when any of the assumed ideal conditions fails to be true. First of all, note that the first-best solution requires the difference between $P_h$ and $P_i$ to be large enough especially when $f_h - f_l$ is small. This may not be satisfied if there is a wealth constraint on the contractual parties. For example, if $P_i$ cannot be, say, less than zero because of the seller's limited liability, then the required $P_h$ can be so high that the buyer has to concede too much rent to the seller to induce high quality. From the buyer's perspective, therefore, an inefficient noncontingent fixed-price contract can be a better choice.
Moreover, if pre-trial renegotiation is costly or inefficient, a contingent contract may lead to a costly contract dispute. In anticipating this, the buyer may be better off to offer a noncontingent contract and, hence, avoid costly contract dispute. This paper, therefore, provides a framework to study the trade-off between contingent and noncontingent contracts.

Given these remarks, we want to point out that the paper does not try to argue that the problem of verification does not matter as far as efficiencies are concerned but rather that difficult verification per se does not necessarily lead to inefficient incomplete contracts. It appears to be other factors that cause the use of incomplete contracts, such as limited liability and costly or inefficient pre-trial renegotiation.

We believe that another important reason for incomplete contracts lies in the fact that future contingencies are often unforeseeable even if the parties know that there is a positive probability with which these contingencies may arise in the future. In this case, even if everybody can observe a contingency once it is realized, it still cannot be contracted on. But this belongs to the realm of bounded rationality. It is certainly one of the most important areas to explore in the future.
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