Selecting Health Care Providers: “Any willing provider” vs. negotiation

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Abstract

We address the question of how a third-party payer (e.g. an insurer) decides what providers to contract with. Two different mechanisms are studied and their properties compared. A first mechanism consists in the so-called “any willing provider” where the third-party payer announces a contract and every provider freely decides to sign it or not. The second mechanism is the third-party payer setting up a bargaining procedure with both providers. The main finding is that the decision of the third-party payer depends on the surplus to be shared. When it is relatively high the third-party payer prefers the any willing provider system. When, on the contrary, the surplus is relatively low, the third-party payer will select a negotiated solution.

Keywords: Bargaining, health care provision, Any willing provider.

JEL classification: I12, I18.

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1 Introduction.

A major change in the health care sector worldwide appears in the contractual arrangements between payers and providers of care. Countries with provision of health care organized around explicit contracts, like the U.S., moved from retrospective to more prospective payment systems. Preferential provider arrangements have also been introduced. Countries with a delivery of health care based on National Health Systems seek to introduce some sort of explicit contracting. Again, the definition of a contract implies the specification of which organizations enter the contract. Some contributions in particular situations are Frech (1991) and Charatan (2000) in the design of doctors’ fees, or Brooks et al. (1997) in the pricing decision of appendectomy between a third-party payer and a hospital.

An alternative procedure is for the third-party payer to follow an “any willing provider” approach: it announces price and conditions, and any provider that finds them acceptable is allowed to join the network. The empirical relevance of this approach is clear. In the US, “any willing provider” laws have recently been the object of intense debate. Such laws force managed care firms to take into their networks of providers all those willing to accept the terms and conditions of the contract (price, quality and licensing). In the economics literature, we find a couple of relevant studies. Vita (2001) provides an empirical test of the hypothesis that “any willing provider” laws increase costs because they reduce the set of available instruments to payers to select providers against the alternative hypothesis that selective contracting creates inefficient risk selection. The inefficient risk selection leads to higher aggregate costs as some people left out will drive cost up by taking the fee-for-service regime. Vita’s findings give more support to the first hypothesis than to the second. These results have not been confirmed by subsequent research. Carroll and Ambrose (2002) report no impact on profitability from “any willing provider” laws. More recently, Morrissey and Oshfeldt (2004) re-examine the issue, including also in the analysis “freedom of choice” laws (which forces managed care firms to pay a fraction of the cost even if patients use a provider of their choice which is outside the selected network of the health plan). They look at market
share of health maintenance organizations in markets under different intensity of “any willing provider” laws, finding a negative effect, though smaller in magnitude than “freedom of choice” laws.

In this paper, we address the question of how a third-party payer decides what type of procedure to follow in contracting with providers. That is, how an insurance company makes the selection of providers to which the individuals contracting a health care insurance will have access to. To make the problem tractable, we consider one third-party payer and two providers. We take the perspective of a third-party payer that, at the beginning of its activity, has a set of providers to choose among. The decision of the third-party payer consists in determining the price at which to reimburse the health care services offered to patients insured with the company. We look at this problem from two different angles. The third-party payer may bargain the reimbursement policy with each provider, or may decide an “any willing provider” policy. In this case, health plans accept any health care provider who agrees to conform to the plan’s conditions, terms and reimbursement rates. The question we address is which of these procedures should a third-party payer select, and the composition of the associated set of providers.

The comparison between the bargaining protocol with the “any willing provider” mechanism hinges upon the size of the surplus to be shared. Given that the “any willing provider” mechanism represents a commitment to be ‘tough’ (in the sense that, once the third-party payer has announced the conditions for providers to join the network, they cannot be modified), the larger the surplus, the more valuable this commitment is.

This paper relates with the works by Davidson (1988) and Gal-Or (1997, 1999). Davidson looks at a model of wage determination where two firms bargain either with (i) the unions representing their respective workers, or (ii) a single union representing all workers. This latter scenario corresponds to our bargaining setting between the third-party payer and the providers. Davidson aims at investigating the impact of the bargaining structure on wage determination. Our interest differs in two aspects. On the one hand, the consequences of the failure of the negotia-
tion with one firm/provider, is to leave the rival firm as a monopolist in Davidson’s model, while in for us, it implies that consumers patronizing that provider must bear the full cost of the service. On the other hand, the aim of our paper is to provide rationale to the “any willing provider” mechanism. Davidson’s scenario (i) represents an extension of our paper where several (two) payers negotiate with providers. This multipayer set-up is also used by Gal-Or (1997) to study the way third-party payers select providers to contract with. She considers two differentiated providers and finds that when consumers’ valuation of accessing a full set of providers is small (large) relative to the degree of differentiation between payers, both payers choose to contract with only one of the (two) providers. Also Gal-Or (1999) addresses the related issue of whether and how the formation of vertical coalitions between physicians and hospital enhances their bargaining power. It is also worth mentioning the work of Glazer and McGuire (2002), who analyze the interaction between a public payer (contracting on a “any willing provider” basis), a private one (selecting providers and adjusting prices according to quality), and a provider. This is a problem complementary to ours, as we consider only one payer and two providers, and no quality choice.

There are other possible mechanisms of interest. Among them, we can point out at sequential bargaining so that after the third-party payer has finished the procedure with one provider, it starts a new one with the second provider. Conducting sequential negotiations may nevertheless increase considerably transaction costs. The implications of sequential bargaining are left for future research.

The paper is organized in the following way. Section 2 lays down the model structure. In section 3 we report the equilibrium solution under bargaining, and describe the equilibrium characterization associated with “any willing provider” contracts. Next, section 4 discusses the optimal negotiation format. Section 5 concludes.
2 Modeling assumptions.

Assume there is population of consumers with a potential health problem. Each member of the population has a given probability of being sick. The expected mass of consumers demanding health care is 1 and it is distributed uniformly on a $[0, 1]$ horizontal differentiation line. The horizontal differentiation line represents the differences providers have at consumers’ eyes. They can be objective, like geographic distance, or subjective, such as personal taste for one provider over the other.\footnote{Implicitly, we assume that there are no quality differences across providers. Otherwise, a vertical differentiation dimension would have to be added to the problem. For quality issues in the provision of health care in the context of vertical differentiation models see Jofre-Bonet (2000) and the references therein.} The location of a consumer in the horizontal differentiation characteristic is independent of the probability of occurrence of the illness episode. In terms of insurance choice models, this adds a background risk to the demand for insurance, thus reinforcing the demand for insurance (Eeckhoudt and Kimball, 1992). The population we study is made of patients and it is, conceivably, a subset of all people insured. In the first-stage of the game, individuals face several possible states of the world (for example, healthy or sick). The uncertainty faced at that stage determines health insurance demand. After realization of uncertainty, if an individual is sick, demands one unit health care. Providers are located at the extremes of the horizontal differentiation line. Whenever a patient cannot patronize his/her best preferred provider, (s)he suffers a loss in utility (or under the geographical interpretation, has to bear a transport cost). We assume the patients’ utility loss increases at a constant rate $t$ per unit of utility.

We also assume that consumers are subject to full health insurance (meaning that consumers pay no copayments when seeking medical care from an in-plan provider). The assumption is made for simplicity and, again, does not change the qualitative features of the model. We can see it as a result of the insurance company offering only full insurance. The insurance contract defines a premium to be paid by consumers, which is taken as given at the moment of contracting with providers. It is also assumed that when selecting providers, the third-party payer has already
collected the insurance premia/contributions from consumers. Thus, total revenues of the insurance company are exogenously given. A consumer when signing the insurance contract does not know beforehand the position (s)he will have in the horizontal differentiation line when sick. This implies that when both providers are successful in reaching an agreement, consumers can patronize either of them only bearing the disutility cost. In case of disagreement with one provider, consumers have the choice of patronizing the in-plan provider at zero cost or the out-of-plan provider at full cost. If no provider reaches an agreement with the insurer, it gives back the premia to consumers and providers compete à la Bertrand in the market.

We restrict attention to equilibrium situations where the third-party payer contracts with at least one provider. The case of not contracting with any provider means that no insurance is, in fact, given. We ignore it in the ensuing analysis. We also assume, for simplicity, zero production costs in the provision of health care. Our qualitative results are insensitive to this simplifying assumption.

Two mechanisms of price formation will be studied. A way of contracting health care services frequently used by Governments and, to some extent, by private health plans or insurance companies involves the payer announcing a price, and providers deciding, on a volunteer basis, to join (or not) the agreement. This is known as “any willing provider” (AWP) contracts. Simon (1995) studies both, the characteristics of the states that have enacted AWP laws and their effect on managed care penetration rates and provider participation. Also, Ohsfeldt et al. (1998) explore the growth of AWP laws applicable to managed care firms and the determinants of their enactment.²

Alternatively, the third-party payer may negotiate with the providers. We propose the Nash Bargaining solution as the equilibrium concept. The Nash bargaining solution yields outcomes that satisfy a set of four conditions (axioms). These axioms have been interpreted as the guiding principles that an arbitrator would

²Within this framework, providers may be, or not, allowed to balance bill patients, that is, they may charge, or not, an amount to consumers on top of the price received by the third-party payer. Balance billing has received some attention in the literature. See Glazer and McGuire (1993), Zuckerman and Holahan (1991) and Hixson (1991). Since balance billing in not crucial to our arguments, we assume it away. This assumption is also supported by its prohibition in several countries.
follow to solve a situation of conflict. The solution was shown to maximize the product of each bargainer gains over the fallback position. The notion of bargaining power is embodied in a parameter $\delta$.

In our setting, the conflict appears because the insurer’s cost represents the providers’ revenues. Naturally, the outcome of the negotiation hinges on the parameters of the bargaining problem. These are the distribution of bargaining power among the players, and the so-called “status-quo”, or the fallback values (that is, the outcome that would arise should the negotiation fail). Negotiations are carried simultaneously with the two providers who decide their actions in a non-cooperative way. We assume that providers do not collude. The issue of collusion among providers is tackled in a companion paper Barros and Martinez-Giralt (2005).

There is a difference to existing literature that is worth noting. Fallback values in one negotiation in our setting, depend on the outcome of the other negotiation. This happens because providers, after each negotiation, compete in the market. Thus, the outcome of each negotiation is conditional on the expected price of the other provider. We force expectations to hold in equilibrium.

A detailed analysis of all these elements is beyond the scope of the present paper. Extensive presentations of bargaining theory are Binmore et al. (1986), Osborne and Rubinstein (1990) or Roth (1985). Also, a short introduction is provided by Sutton (1986).

Generically, providers may have different bargaining powers, so that the distribution of bargaining power will involve a parameter constellation for the third-party payer and the two providers respectively. However, we are interested in comparing different systems of negotiation between a third-party payer and a set of providers. To keep focus in this issue, we will assume that all providers have the same bargaining power, so that they will be symmetric in all respects. We could think of asymmetries in bargaining power as a way to capture differences in tech-

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3The axioms are: invariance to equivalent utility representations, symmetry, independence of irrelevant alternatives and Pareto efficiency. See Osborne and Rubinstein (1990, pp. 11-13).
4An overview of the use of bargaining in health care model can be found in Barros and Martinez-Giralt (2000).
nology, size, quality, etc. among providers. In turn, this would imply that we would have to allow providers to react to the differential characteristic (e.g. invest in size, R&D, quality, etc.) introducing an additional stage in the game. In our perception this implied modeling would add little to the determination of prices. We discuss the implications of this assumption at the end of the paper.

3 Equilibrium analysis.

3.1 “Any willing provider” contracts.

“Any willing provider” (AWP) contracts have the third-party payer announcing a price $p$, and leaving to the providers the option of joining, or not, the agreement. Although in reality AWP contracts also include conditions on dimensions other than price, here we concentrate on the price aspect to be able to compare the outcome of AWP contracts with the corresponding outcome of the negotiation procedure. In a world of two providers, the set of possible decisions defines four different sub-games in prices, which in turn define previous-stage profits for providers. Therefore, we first characterize the four subgames. When both providers choose to join the agreement, demand is split in half. Each provider receives price $p$. Profits earned are $\Pi_i = p/2$, $i = A, B$. The third-party payer, in turn, obtains profits $R - p$, where $R$ denotes its revenues coming from the premia collected from the insured individuals. In the other polar case of both providers choosing not to join the agreement, the market game is back to the Hotelling price game. In this case, the third-party payer gives $R$ back to consumers, eventually added of a penalty $F$. Equilibrium profits are $\Pi_i = t/2$, $i = A, B$.

The last possible case has one provider joining the agreement and accepting to receive $p$, while the other stays out and sets freely its price. Without loss of generality, we assume provider $A$ to join the agreement. Demand is defined by the location of the indifferent consumer, which is given by:

$$tx = p_B + t(1 - x), \text{ or } x = \frac{1}{2} + \frac{p_B}{2t}.$$

Since providers are not allowed to balance bill patients, someone visiting pro-
provider $A$ pays nothing while if he visits provider $B$ pays the full price charged by the latter provider. The equilibrium price of provider $B$ is $p_B = t/2$ and profits are $\Pi_B = t/8$ and $\Pi_A = 3p/4$.

The payoff matrix of the first-stage of the subgame is now given by Table 1 (.

<table>
<thead>
<tr>
<th>A/B</th>
<th>Join</th>
<th>Not Join</th>
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<tbody>
<tr>
<td>Join</td>
<td>$p/2 : p/2$</td>
<td>$3p/4 : t/8$</td>
</tr>
<tr>
<td>Not Join</td>
<td>$t/8 : 3p/4$</td>
<td>$t/2 : t/2$</td>
</tr>
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Table 1: AWP providers’ equilibrium profits.

For the outcome of both providers joining to be an equilibrium, it is necessary and sufficient that

$$\frac{p}{2} \geq \frac{t}{8} \quad \text{or} \quad \frac{p}{t} \geq \frac{1}{4}.$$  

On the other hand, for both providers to stay out of the agreement, we need to have $p/t < 2/3$. It is straightforward to check that there is no asymmetric equilibrium in pure strategies. The different possibilities can be traced in the $(p, t)$ space as shown in Figure 1. Although this may appear natural given the symmetry of players, à priori one could not rule out that asymmetric equilibria may result from an ex-ante symmetric market structure.\(^5\)

We find that there is a range of parameter values for which both equilibria may arise. We use Pareto dominance (from the providers’ viewpoint) as selection criterion, which ensures that only one equilibrium is selected. Thus, the equilibrium where both providers join the agreement occurs for $p/t \geq 2/3$, as in the intermediate range it is dominated by the other equilibrium candidate.

We take now the optimal choice of the price set by the third-party payer. The criterion is the minimization of total health expenditure. Given the initial assumption of full insurance, all expenses will be paid, irrespective of the in-plan provider chosen by each particular consumer. The optimal value of $p$ to be announced in the “any willing provider” contract is the lower price that still allows for both providers

\(^5\)Most textbooks of game theory provide examples of $2 \times 2$ games of symmetric agents where only asymmetric equilibria exist. More structured market situations, like vertical differentiation, also result in asymmetric equilibria with ex-ante identical firms.
accepting it. Thus, the optimal price is \( p/t = 2/3 \). This optimal price is also lower than \( t \), which guarantees that the third-party payer prefers to announce “any willing provider” contracts instead of allowing free competition between the parties (and having to reimburse consumers from the care they would seek in a pure private market equilibrium).

Note that the payer needs to announce a fee sufficiently high to induce participation of at least one provider. But in equilibrium with both providers participating the fee is higher than an offer where the payer would extract all the surplus (a so-called take-it or leave-it offer) would have been. In other words, the payer is willing to give away some monopoly (bargaining) power in order to induce an equilibrium with providers’ participation. Thus, softening the (full) bargaining power that a too rigid payer would reflect in committing to a high fee.

One could think of alternative ways to model fee schedules, such as a two-part tariff where the variable part could be linked to the market share of the provider. As we are only dealing with price schemes, appealing to real market situations, this type of schemes are beyond the scope of this paper. Alternatively, the payer could propose a price scheme conditional on the number of participants. In particular, a
price,

\[
p = \begin{cases} 
2t/3 & \text{if one provider participates} \\
 t/4 & \text{if two providers participate}
\end{cases}
\]

would yield a unique equilibrium \(p = t/4\) with both providers joining the agreement. However, AWP regulation does not allow for discrimination among participants. Also, in our setting of perfect information, the equilibrium price should be renegotiation-proof, so fees are not to be expected to be adjusted once providers have agreed to the price.

### 3.2 Bargaining.

By bargaining we refer to the situation where the third-party payer carries negotiations simultaneously but independently with the providers. The third-party payer has a bargaining power strength parameter given by \(\delta\) and each provider is endowed with \(1 - \delta\). Note that this situation does not correspond to a process where after failing to close a deal with one provider, the third-party payer addresses the second one. In our scenario, the provider when accepting or rejecting a deal does not know the outcome of the other parallel negotiation process.

Three scenarios may appear. Both providers successfully close the negotiation with the third-party payer, none does, or only one is successful. We start by introducing some notation. Let \(R\) be the (exogenous) premia collected by the third-party payer. \(F\) denotes the penalty to the third-party payer when one provider does not accept. This penalty is left unspecified at this stage. It captures the point that an insurer giving access to a smaller set of options in health care provision faces a cost to it (for example reputation, value of variety and freedom of choice to consumers, or money returned to insured people). By \(\hat{\Pi}\) we denote third-party payer’s surplus; \(\Pi_i\) are profits to provider \(i\) when both negotiations are successful; \(\tilde{\Pi}_i\) are profits to provider \(i\) when its negotiation succeeds while \(j\)’s does not; \(\bar{\Pi}_i\) are profits to provider \(i\) when its negotiation fails while \(j\)’s is successful. Finally, \(\underline{\Pi}_i\) are profits to provider \(i\) when both negotiations fail. Table 2 summarizes these alternatives.

Given that we are assuming away production costs in the provision of health care services, providers’ profits are simply the revenues from providing treatment
to those patients patronizing the respective facilities.

Surplus obtained by the third-party payer when negotiations are successful with both providers are given by $R - \Pi_A - \Pi_B$. When, say, only provider $A$ reaches an agreement, the revenues to the third-party payer are $R - \Pi_A - F$. Finally, if no negotiation succeeds, the third-party payer obtains zero revenues (as no insurance is contracted). We now characterize providers’ profits.

### No successful negotiation.

In this case the market game is just a Hotelling price game with fixed locations. The symmetry of the solution implies equal demand to each provider and prices are, in equilibrium, $p_i = t$, $i = A, B$. Associated equilibrium profits are $\Pi_i = t/2$, $i = A, B$.

### Two successful negotiations.

We deal now with the conditions to be satisfied such that both negotiations are successful.

Given our assumption of full insurance, an equilibrium with both providers accepting exists, given the symmetry between providers, when the same price prevails for both. Hence, providers will share the market evenly and their profits will be given by half of the respective equilibrium price since total demand is normalized to the unit.

The negotiation with provider $A$ is described by the following problem,

$$\max_{P_A} \left[ (R - \Pi_A - \Pi_B) - (R - F - \Pi_B) \right] \delta (\Pi_A - \Pi_A)^{(1-\delta)}$$

where $P_A$ denotes the fee for provider $A$. 

<table>
<thead>
<tr>
<th>$i \setminus j$</th>
<th>Success</th>
<th>Fail</th>
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<td>Success</td>
<td>$\Pi_i, \Pi_j$</td>
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<tr>
<td>Fail</td>
<td>$\Pi_i, \Pi_j$</td>
<td>$\Pi_i, \Pi_j$</td>
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Table 2: Providers’ profits alternatives.
The fallback level of the third party payer is defined by the profits it obtains under the agreement with the other provider, net of the penalty associated to a smaller set of providers than the maximum possible. The fallback for the provider is given by the profits available when the rival provider succeeds in his/her negotiation. This are profits when provider $i$ is out-of-plan, so that those patients patronizing it have to bear the full cost, while its rival is an in-plan provider. This implies that the location of the consumer indifferent between either provider is given by $x(P_i) = \frac{1}{2} - P_i \frac{t}{2}$ and provider $i$’s profits are given by $\Pi_i(P_i) = P_i x(P_i)$. Thus, the maximizer price is, $P_i = \frac{t}{2}$, and profits $\Pi_i = \frac{t}{8}$. This yields $\Pi_j = 3P_j/4$ (see section 3.1).

Similarly, the negotiation with provider $B$ is given by,

$$\max_{P_B} \left[ (R - \Pi_A - \Pi_B) - (R - F - \Pi_A) \right]^{\delta} (\Pi_B - \tilde{\Pi}_B)^{(1-\delta)},$$

where $P_B$ denotes provider $B$’s fee, and by symmetry the above characterization holds.

We have now to define the profit value $\tilde{\Pi}_i$, which are the profits to provider $i$ when its negotiation succeeds, while provider’s $j$ negotiation does not succeed. Since the negotiation of provider $i$ has succeed its price will be $\tilde{P}_i$, while consumers in-plan do pay nothing. The other piece of information needed to define its profits is the level of demand. The level of demand is determined after provider $j$ has chosen its price, given the price $\tilde{P}_i$ of its rival. Acting as monopolist on residual demand, provider $j$ sets price $P_j = t/2$. From this, it follows that demand to provider $i$ is given by $x = 3P_i^4$, and consequently $\Pi_i = 3/4P_i$. From the symmetry of providers, it follows that, $\Pi_A = \Pi_B = \tilde{\Pi}$, $\Pi_A = \Pi_B = \Pi = t/8$, and the system of first order conditions will also be symmetric.

The first order conditions of the maximization problems yield,

$$P_i = 2(1 - \delta)(F + \tilde{\Pi} - \frac{1}{2}P_j) + \frac{\delta t}{4}, \quad i, j = A, B; \ i \neq j.$$

Solving the first order conditions and denoting the fallback value of the third-party payer as $\tilde{R} \equiv F + \tilde{\Pi}$, that is, the net payment by the third-party payer when
negotiations fail with one provider, we obtain the (symmetric) prices:

\[ \tilde{P} = \frac{2(1 - \delta)}{2 - \delta} \tilde{R} + \frac{\delta t}{4(2 - \delta)} > 0. \]

Substituting the value of \( \tilde{R} \),

\[ \tilde{R} \equiv F + \tilde{\Pi} = F + \frac{\delta t}{2} + (1 - \delta)(R - F) \]

we obtain,

\[ \tilde{P} = \frac{2(1 - \delta)}{2 - \delta} \left( \frac{\delta t}{2} + (1 - \delta)R + \delta F \right) + \frac{\delta t}{4(2 - \delta)}. \]

These (positive) prices are equilibrium prices if two additional consistency conditions are met: (i) no provider wants to leave the agreement and (ii) the third-party payer obtains non-negative revenues. Condition (i) requires \( \Pi(\tilde{P}) = \frac{\tilde{P}}{2} \geq \frac{t}{8}. \) This is satisfied iff \( \tilde{R} > \frac{t}{4} \). Condition (ii) is fulfilled iff \( R \geq \tilde{P} \).

One successful negotiation only.

Take now the case of only one provider accepting the price determined in the negotiation process.

Assume that provider \( i \) accepts the deal while provider \( j \) rejects it. The negotiation process between the third-party payer and provider \( i \) is described by,

\[ \max_{\tilde{P}_i} (R - \tilde{\Pi}_i - F + \delta(\tilde{\Pi}_i - \Pi_i))^{1-\delta}. \]

The solution of this problem is given by,

\[ P_i = \frac{4}{3} \left( \frac{\delta t}{2} + (1 - \delta)(R - F) \right); \quad P_j = \frac{t}{2}; \]

\[ \tilde{\Pi}_i = \frac{\delta t}{2} + (1 - \delta)(R - F); \quad \Pi_j = \frac{t}{8}; \] and,

\[ \tilde{\Pi} = \delta \left( R - F - \frac{t}{2} \right). \]

The pair \( (P_i, P_j) \) will constitute an equilibrium price pair if (i) providers’ prices and third-party revenues are non-negative and (ii) provider \( i \) is not willing to quit the agreement (i.e. \( \tilde{\Pi}_i \geq \Pi_i \)) and provider \( j \) does not want to join it (i.e. \( \Pi_j \geq \Pi_j \)).

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The penalty \( F \) for not having one provider plus the payment to the remaining provider.
Third-party revenues are non-negative iff \( R - F \geq t/2 \). This condition is also sufficient to ensure that \( P_1 \geq 0 \) and that provider \( i \) does not have incentives to leave the agreement. Provider \( j \) does not want to join iff \( R \leq t/4 \).

Note that the latter condition is not compatible with the former, so that we cannot have an equilibrium with only one provider successfully terminating the negotiation with the third-party payer.

We can summarize the discussion in the following proposition.

**Proposition 1.** It is not possible to find an equilibrium configuration where only one provider reaches an agreement with the third-party payer.

Moreover, when \( \tilde{R} \geq t/4 \) and \( R \geq \tilde{P} \), both negotiation processes are successful and the equilibrium price is given by \( \tilde{P} = \frac{2(1 - \delta)}{2 - \delta} \tilde{R} + \frac{\delta t}{4(2 - \delta)} \).

This proposition implies that under an explicit bargaining procedure with identical providers it cannot be the case of only one successful negotiation. Again, in our framework, the symmetry of players does result in a symmetric equilibrium. The disadvantage in terms of demand from being left out is higher than the advantage of being a price-setter. Moreover, it is not clear that the equilibrium price is smaller than the one prevailing on the stand-alone market (that is, without insurance to consumers). The condition for a higher price under bargaining relative to the stand-alone case is \( \tilde{R} \geq t/2 \), which is compatible with the conditions for existence of a bargaining equilibrium.

It is also a straightforward matter to see that an increase in the bargaining power of the third-party payer (measured by a higher \( \delta \)) means a lower price, as one intuitively expects. Algebraically, this property is given by

\[
\frac{\partial \tilde{P}}{\partial \delta} = -\frac{2(\tilde{R} - t/4)}{(2 - \delta)^2} < 0
\]

given the assumptions underlying Proposition 1.

### 4 The preferred negotiation format.

So far we have presented two different approaches to the insurer’s problem of selecting providers. In order to have some basis for comparison, we have reduced
the analysis to pricing decisions assuming away all other elements that enter both in the negotiations and in the “folder of conditions” of the AWP approach. Such elements include quality standards, time schedules, working conditions, etc. By reducing the analysis to the characterization of equilibrium prices, we are able to compare profits of the different agents in the different scenarios.

Note that the comparison between bargaining and AWP is only relevant for $p \geq 2t/3$ and also for $R \geq \min\{\frac{t}{2} + F, \frac{2t}{3}\}$. As shown previously, values of $R$ above $\frac{t}{2} + F$ ensure non-negative profits to the payer under bargaining and also guarantees participation by the providers; values of $R$ under $2t/3$ would yield negative surplus to the payer under the AWP regime.

From the point of view of the third-party payer, the bargaining procedure is better than “any willing provider” if
\[
\hat{\Pi}_{SB} - \hat{\Pi}_{AWP} = p - \left(\frac{\delta t}{4(2 - \delta)} + \frac{2(1 - \delta)}{2 - \delta}\right) > 0.
\]

This condition defines a line, as shown in Figure 2, which allows for a simple description of the basic economic intuition. The intuition runs as follows. If $\tilde{R}$ is small, there is not much surplus to bargain. Hence, prices will be below the price required in the any willing provider case to generate the acceptance outcome. The reverse occurs for high $\tilde{R}$. Since the bargaining process transfers surplus, the any willing provider contract is equivalent to a “tough” bargaining position. The commitment to a price is more valuable when $\tilde{R}$ is large.

Another property, resulting directly from the bargaining equilibrium is that an increase in the bargaining power of the third-party payer leads to a larger region of dominance of bargaining as the preferred procedure. This follows immediately from the price of the bargaining equilibrium being negatively associated with third-party payer’s bargaining power.

A comment is in order here. We have seen that under bargaining given the symmetry of the model both providers accept the same price. Why is it not the case that under AWP announcing that price is not an equilibrium? Actually, under AWP we have obtained that for any $p \geq t/4$ both providers join. Also, we have shown that there are two equilibria where both providers join and where no provider joins.
Artificially, (since the Pareto criterion does not select among the two equilibria) we are forcing $p > 2t/3$ to eliminate the equilibrium where no provider joins as it cannot be an equilibrium of the full three-stage game. In other words, we are imposing to the third-party payer a conservative behavior in the sense that we are not allowing it to announce a price $p \in (t/4, 2t/3)$ so that no provider would decide to accept.

In our two-provider world, it is never the case that one provider decides to join negotiations with the third-party payer, while the other provider remains outside any agreement. One may question whether this a general feature. In particular, we want to address whether this is a matter of a small number of providers, or not. The basic intuition carries through to a world with more providers. A question of interest is whether the increase in the number of providers does change the relative attractiveness of bargaining vs. any willing provider contracts. Under reasonable assumptions, an increase in the total number of providers makes less likely for any willing provider contracts to dominate. This is so because the equilibrium price under bargaining will be lower the higher the number of providers, while the optimal price under the any willing provider procedure is insensitive to the number
of providers\textsuperscript{7}.

5 Final remarks.

In this paper, we address a simple question: what negotiation procedure should a third-party payer select when contracting health care providers? Two alternatives, commonly observed, have been considered: bargaining and “any willing provider” contracts.

The main finding of the analysis is that whenever the surplus to be shared in the bargaining is relatively high, the third-party payer prefers the “any willing provider” system. This is so because the simple price announcement constitutes an implicit commitment to be tough. This commitment is more valuable in the case of a bigger surplus.

Our analysis shows that finding voluntary use of “any willing provider” clauses in some circumstances but not in others is consistent with economic theory when a bargaining alternative is available. This can also be related to the mandatory use of “AWP” laws in some US states, while firms/managed care/ health plans may use it in other states, or opt for bargaining procedures.

Although most of the analysis has been done considering two providers only, we can extend the same arguments to an arbitrary number of providers. Moreover, under the symmetry assumptions used, the possible equilibria with an arbitrary number of providers are characterized either all providers joining the agreement with the third-party payer, or none accepting the proposal of the third-party payer.

Some caveats to the model deserve discussion. The first one is the symmetry across providers. We conjecture that introducing asymmetries across providers, be it in the bargaining power vis-a-vis the third-party payer, or in the production costs of health care services, will not change the qualitative results, especially if price discrimination by the third-party payer across providers is not feasible. This seems to be, in general, the case. Payments to providers can differ according to

\textsuperscript{7}An appendix available at ⟨http://ppharros.fe.unl.pt/papers.html⟩, shows that there is no subset of providers which choose, in equilibrium, not to negotiate prices with the third-party payer.
patient characteristics but not according to providers’ efficiency level. Of course, some exceptions exist (for example, high reputation doctors may be able to obtain a better value for consultation).

Second, we conjecture that the introduction of asymmetries would allow us to obtain equilibria characterized by some providers being associated with the third-party payer, while others remain independent. Once again, we believe the relative advantages and costs of the different bargaining procedures to still be present.

The third issue is quality. We have assumed away quality considerations. Thus, our analysis applies to the provision of services where quality can be easily monitored, or does not have a major impact on patients’ selection of provider. Again, we conjecture that the essential trade-off in choosing between “any willing provider” contracts or an explicit bargaining procedure would remain. It would not change our insight related to the incentives of the third-party payer to choose one of the bargaining procedures proposed. This is left for future research.

The analysis renders some testable predictions. The simplest one to put to test is that whenever a high surplus to be shared exists, one should be observe more frequently “any willing provider” contracts. Another one is that the number of providers should not have an impact on the selection of the bargaining procedure as long as the surplus per patient treated is kept constant. If the per capita surplus grows (decreases) with the number of providers in the market, then one should observe “any willing provider” more (less) often. These predictions have not been addressed in the empirical literature. It is beyond the scope of the paper to empirically test these implications. The empirical testing of the model is left for future research.
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