An Examination of Asymmetric Information and the Firm – Labor Bargaining Relationship

An Honors Thesis
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This paper examines the process of the firm - labor bargaining relationship by concentrating primarily on the pervasive economic theory of asymmetric information. A fairly comprehensive explanation of asymmetric information is provided, along with a series of asymmetric information examples. Included in the discussion of asymmetric information are explanations of a few of its subtopics: moral hazard and adverse selection.

Following the explanation of asymmetric information, a model of the firm - labor bargaining relationship is provided. Firms, labor unions, negotiations and their respective roles are highlighted.

This model is then combined with the theory of asymmetric information to give a thorough explanation of the bargaining process and the intricacies of negotiations. The informational struggles which both the labor unions and firms experience receive particular attention. Next, an outline of the bargaining process is provided.

Lastly, in a case study of the National Football League, the negotiations between the league and its players is examined. This model explores free agency and benefit negotiations undertaken by both parties in the NFL relationship as an application of asymmetric information.
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One of the major concerns of the business community in the industrial and post industrial ages has been relations with labor. More specifically, the determination of wage levels, development of benefit packages, and creation of contracts have all been areas of concentration for both labor and management. With the arrival of labor unions and collective bargaining, the entire process of contract negotiation has become even more complicated -- and controversial.

As is expected when an area of life or business becomes important, it is studied; studying the firm - labor relationship has become a popular pastime (and occasionally, occupation) for economists. This paper examines the process of the firm - labor bargaining relationship by concentrating primarily on the pervasive theory of asymmetric information and its offshoots, establishing the theory's necessity and value in terms of understanding the firm - labor relationship, and by examining the principal aspects of the firm - labor bargaining model. This model is then applied to a case study using the National Football League and its negotiations with the National Football League Players' Association (the players' union).

**Asymmetric Information**

Essential to understanding the firm - labor bargaining model is the theory of asymmetric information. Asymmetric information is the primary assumption contained in most models.

Asymmetric information can best be understood by first examining two classical welfare theorems authored by Arrow and Debreu -- known as the Arrow - Debreu Model. This model assumes
perfect information, and states,

"(1) ... under suitable assumptions on the preferences of consumers and the production possibilities of producers, the allocation of resources in a competitive equilibrium is optimal in the sense of Pareto ... , (2) and conversely every Pareto - optimal allocation of resources can be realized by a competitive equilibrium." (Arrow and Debreu 265)

With perfect or symmetric information and competitive bargaining conditions an efficient competitive outcome is guaranteed in the sense of Pareto, and every possible Pareto - optimal resource allocation can be achieved through competitive bargaining. Arrow and Debreu assert further that the second theorem inherently provides that each individual can supply some sort of product (i.e. labor), and that each type of labor has a productivity factor in the creation of goods (266).

Pareto optimality, as used in the theorems presented above, is a synonym for economic efficiency in the sense that the resource allocation is "efficient"; i.e. there is no other feasible allocation that makes one party better off without making the other or others worse off (Holmstrom and Myerson 1799). In other words, no other bargaining agreement can be reached ex post that benefits one party without lowering the utility level of another party.

If one assumes away all transaction costs, the key to this Arrow - Debreu Model is the assumption of symmetric information. This means that each party knows his competitor's preferences perfectly; he knows the profitability and quality of the product and all processes; he knows the current market conditions; he
knows his own preferences, abilities, value, and earnings potential in his next best alternative; and he knows all other information relevant to the bargaining process. Therefore, according to Arrow and Debreu, with the assumptions made above, every competitive bargaining agreement would be efficient and Pareto-optimal.

This assumption concerning symmetric information is demonstrated by Rubenstein in his model that explores the division of a pie between two parties. In the pie example, both parties have perfect information concerning the other's preferences and the size of the pie. The two parties must agree on how the pie is to be divided. Rubenstein shows that invariably the first suggested division method will be accepted by both parties (i.e. it is Pareto-optimal and efficient) (Rubenstein 99).

Carrying these theories into a market setting, Rooth and Cressy assert that the assumption of symmetric information implies that both parties (or more) to a contract will know the outcome before embarking on a costly bargaining struggle. If both parties are rational, they will, therefore, agree to terms ex ante before incurring the costs of bargaining (Rooth and Cressy 269). Why then does the market "break down" and not achieve these efficiencies? Why do lengthy bargaining struggles even exist? The commonly accepted answer to this question is: asymmetric information.

Asymmetric information, an economic phenomenon, occurs when a party does not possess all relevant information concerning a
realized or potential agreement. Using Rubenstein's pie as an example, one party may not know how much another likes or dislikes the pie they are dividing. One or both parties may not know the size of the pie. One or both parties may not know the highest valued alternative use of the pie; the possibilities for asymmetric information are too many to enumerate. But, one can see how bargaining becomes necessary when one possesses imperfect information.

Two more specific examples of asymmetric information are moral hazard and adverse selection. Both are encountered often in the firm-labor bargaining model.

Moral hazard can be explained by looking at a principal-agent relationship where the principal is the employer of the agent, and the actions of the agent affect the well-being of the principal. Moral hazard exists when the actions of the agent are undertaken to maximize the agent's own utility, to the detriment of the principal, where the agent will not incur the full cost of the action. (Harris and Raviv 232).

These cases of moral hazard are exemplified in actions of the agent that are hidden or unobservable (McAfee and McMillan 561). Conversely, moral hazard may also exist in a situation where the agent possesses a greater knowledge on a subject than the principal. This advantage in information on the part of the agent renders the utility of the agent's actions unobservable to the principal (i.e. the principal can observe the actions of the agent, but the principal does not know if they are in his own
best interest (asymmetric information). An example of this would exist in a client–attorney relationship where the client (the principal) can observe the actions of the attorney (the agent), but the client does not know if these actions are in his own best interest.

On the other hand, adverse selection exists when a purchaser cannot exactly determine the quality of a good he intends to purchase. The selection of goods provides many opportunities for adverse selection.

Inherent in any bundle of goods are some defective units, and adverse selection occurs when a purchaser acquires one or more of these defective goods when the purchaser did not intend to do so. Generally, the only pieces of information available to a purchaser are market statistics on the quality of a group of similar products. In this case an incentive exists for sellers to provide a defective good. The sale of a defective unit affects the group statistics, but it does not affect the information available concerning the goods available from a specific seller (Akerlof 488). Therefore, a seller knows the quality of a specific good, but the buyer does not (asymmetric information).

A hypothetical example of this could exist in a franchised fast food restaurant. Most chains of restaurants rely on maintaining a standard level of quality throughout all of their individual restaurants, and most chains employ rigid standardization and observational techniques to ensure that each of their franchisees is attaining a certain level of quality. The
McDonald's franchise is a perfect example of these techniques in use. McDonald's has had success by franchising to very limited geographical areas. The number of stores an individual franchisee is permitted to open in one area is partly determined by how closely the owner(s) conforms to the edicts of McDonald's headquarters. Ray Kroc summed up this franchising philosophy in 1958 when he said, "Now, damnit, we are not going to stand for any monkey business (from franchisees). These guys want to sign a franchise, by God, it is a matter of buyer beware. Once they sign it, they are going to conform and we are going to hold to it that they do conform." (Love 61)

As can be seen from the examples already provided, an incentive would exist for the owner of an individual restaurant to attempt to subvert some franchise standards in the interest of greater profits. The owner would know that the reputation of his individual restaurant is generally dependent on the reputation of the group of restaurants -- particularly if his is a predominantly tourist clientele. Of course, the chain will take measures to prohibit this from happening, but the incentive to the owner does exist. Hypothetically, a tourist consumer would choose a particular restaurant on the basis of its national or regional reputation. By doing so, the consumer runs the risk of adverse selection.

An example of adverse selection concerning the hiring of labor specifically has been examined. This example highlights the advantage in information a firm can possess over its rival(s)
when the firm's employees, who possess firm-specific training, have been trained by the employing firm (Chiang and Chiang 176). In this case, the firm with the better information can retain the employees with a greater ability (as demonstrated through their training), and the firm is able to dismiss the less able ones. Therefore, the workers in the labor pool that are available to the lesser-informed firm(s) are, on average, less qualified than those employed by the better-informed firm; a greater danger of adverse selection exists for the firm who doesn't train its own people (i.e. the firm possesses less or asymmetric information.) It can be seen from this example that adverse selection is also an information-related malady caused by asymmetric information.

**Firm - Labor Bargaining Model**

A model of the firm-labor bargaining relationship has evolved over time as economists have continued to study methods of agreement between firms and labor. Basic overviews of unions, firms, bargaining, and some primary assumptions concerning each are given below.

Labor unions are assumed to link a homogeneous pool of workers through a collective bargaining agreement (Fisher 501). Unions are charged with operating in the best interest of their members, and most are run democratically. Unions are assumed to want to achieve the maximum utility for their members without bankrupting the firm (Tracy 151).
Firms can be any type of business; in this model, one should assume that firms employ a pool of laborers who work under contract. Firms are assumed to be profit-maximizing; they possess a team of management that is generally responsible for the workings of the firm. Specifically, management is generally responsible for employing several laborers at a wage suitable to minimize costs to the firm.

Negotiations are attended generally by management of the firm and negotiators from the union. The intent of negotiations is to agree on wage levels, benefit packages, etc. that the union feels are satisfactory and that the firm feels it can afford while staying in business (i.e. normal profits). The agreement desired is Pareto-optimal, and serves to resolve a conflict confronted by the workers. This conflict is such that the workers forgo opportunities (opportunity costs) in order to provide labor for the firm, while the firm receives a benefit from this labor (Harris and Raviv 234). Compensation in the form of wages and benefits provides the consideration for the workers' opportunity costs. Workers will continue to provide labor to the firm as long as their income, at the margin, is greater than their marginal cost (opportunity cost) of providing this labor.

Both sides in this bargaining situation hold leverage against the other. For example, the firm ultimately controls the wage provided to labor as well as the individual laborers' very employment (by the particular firm). However, labor provides an important input to the production process, and the wage offered
by the firm is a determinant of the quantity and quality of labor
the firm can attract and retain.

Strikes are leverage tools that unions may use against firms
with hopes of convincing the firm to consent to a bargaining
request. Occasionally, when negotiations reach an impasse or
"bog down," or when a firm declines to negotiate, a union will
call for a strike. The strike, in effect, makes the labor of the
union members unavailable for hire by the firm, thus shutting
down all or some production for at least a short period. A
further, more detailed discussion of strikes will be contained in
the next section.

**Presence of Asymmetric Information in the Bargaining Model**

The theory of asymmetric information is pervasive throughout
the current economic model of firm - labor bargaining. This
asymmetry of information is present for both firms and labor;
neither one possesses perfect information.

Negotiations serve to perform an information - revealing
role. Labor needs information about firms for determining what
level of wages or benefits it can reasonably demand from the
firm. Negotiations are expected to continue as long as the
marginal value of the information expected to be received exceeds
the marginal costs of the negotiations (Tracy 152).

One primary piece of information labor hopes to discover
through negotiations is the profitability of the firm (Card 625).
By determining the profitability of the firm, the union knows how
much of a wage increase the firm can afford; according to Rooth
and Cressy, in the negotiation process "... information is only acquired if the union's demand is rejected by the firm (270)."

Therefore, the only way for a union to discover the economic profits of a firm is to make an offer, knowing that it will be rejected. Any offer that is accepted reveals only that the profitability of the firm assumed by the union when making the offer is higher than was assumed (Samuelson 995). The union must, therefore, "... weigh up the advantages of a higher wage now if the demand is accepted against the advantage of more information ... if the demand is rejected (Rooth and Cressy 270)."

Of course, the firm has an incentive to claim that it is not profitable; the only way the union can convince the firm to pay the higher wage is through the "penalty" of a strike (assuming that a less profitable firm will choose to endure a delay in production in favor of paying a higher wage) (Card 626). To accomplish this, a union's initial offer may contain a high wage level with an agreement not to strike. All following offers may contain a lower wage level with a set strike period. By providing a continuous series of declining offers, the union then hopes to find the "true" (or exact) profitability of the firm (Fisher 501).

Another piece of information the union may wish to gather on the firm is the firm's "perceived quality." According to Giammarino and Nosal, the better is the perceived quality of a firm, the more likely it is to produce higher profits. As
Giammarino and Nosal state, "... because of this, low-quality firms might find it in their best interest to disguise their true quality by paying wages that are consistent with high-quality firms ... (160)." If a union can determine the perceived quality of a firm or the importance of this perceived quality to the firm or industry, the union may be able to use perceived quality as a bargaining tool.

As was stated, asymmetry of information exists for firms as well as unions. One example is seen when examining the principal-agent relationship between firms and labor. Moral hazard exists in this relationship when the efforts of individual laborers may not be readily observable by the firm. As McAfee and McMillan assert, the principal (the firm) may ensure efforts of laborers (agents) close to the full-information ideal. This can be done by either using incentive contracts that provide rewards to pools of workers for attainment of output goals, by using penalty contracts that punish pools of workers for not realizing production goals, by profit-sharing, or by employing a method of direct observation of the efforts of the individuals (often the most costly alternative) (561). Therefore, a firm may choose to negotiate an incentive or penalty contract to make up for an asymmetry of information.

Another asymmetry of information exists for the firm in that it cannot observe the outside job offers of its employees (Arvin 99). Tracy has found that strike activity is positively related to laborers' outside opportunities (161); contracts may serve as
the only method of assuring infrequent turnover of labor. Of course, alternatives are often a function of ability, and the ability of a worker is only known to himself (McAfee and McMillan 562). As Perri states,

"When firms in one sector do not know the ability of individual workers and there is a positive relation between ability and alternative earnings, then firms will tend to pay the same wage to all workers and the average abilities of the employed will be positively related to the wage . . . the profit - maximizing wage may exceed the wage which clears the labor market, causing equilibrium unemployment (914)."

Another danger for firms exists because the ability of a worker is known only to himself (McAfee and McMillan 562). Because this is the case, the possibility of adverse selection of labor exists for the firm.

The Bargaining Process

The processes of contract negotiation have been thoroughly defined by economists through their studies of firm - labor relationships. Two alternative models, or methods, of negotiation have emerged for use by labor unions for information - determination about a firm. Both models use a schedule of offers, but they differ in their methods of offer delivery.

A sequential bargaining model contains a series of offers given over time (Card 627); in this case, a first offer is given, and if it is rejected, time passes until a new offer is given. According to Hart, it is reasonable to assume that there will be a delay between offers because a transaction cost is incurred in making an offer (26); any offer must be discussed by top officials of either the offering firm or the offering union. The
length of time negotiations continue is also said to have an effect on the probability of strike occurrence. According to Fisher, each month of negotiations increases the probability of a strike by 3.7 percent (508).

A full - commitment model does not allow for a delay between offers. Instead, a wage - strike schedule is offered to a firm from which the firm is instructed to select a wage level and, if called for, the corresponding length of a strike (Card 627). Here, the firm is faced with a downward - sloping wage - strike schedule. Theoretically, this will induce firms with high profitability to choose a higher wage (Card 627, Hart 25).

Some interesting factors other than wages have been determined to have an impact on the probability of strike occurrence in a negotiating situation. For example, according to Fisher, "... a greater variability in firm demand increases the likelihood of a strike ... (508)." This variability causes firms to be hesitant to agree to a high wage level when demand may drop, thus rendering them unable to afford to pay this higher wage. In addition, an increase in the union's uncertainty about the profitability of a firm is said to increase the probability of a strike (Tracy 150); a strike is therefore more valuable because of the information it provides to the uncertain union.

**Case Study - National Football League**

A specific, and well - publicized, example of the firm - labor bargaining model can be seen in the ongoing dispute between the National Football League (NFL) and the National Football
League Players' Association (NFLPA). The NFL example does not mirror the average bargaining situation in that players negotiate their own contracts with the teams. Collective bargaining concerns itself only with pensions, benefit packages, and general operating conditions of the league, but disagreements still exist between the players' union and the league. The current dispute in the NFL is concerned primarily with benefit packages and free agency for the players (King "Players Speak" 58).

Free agency permits players to choose the team they wish to play for. Under free agency, teams are forced to make offers to players and compete against one another for the services of a particular player. In contrast, as it stands now, after college a player is drafted by an NFL team. Subsequently the player becomes the property of that team. In most cases, the team decides when to trade a player.

A form of free agency exists in the NFL, but it is available only to team-selected players. Currently, a two month free agency period does exist after the NFL season is over, but free agency is only available to players who are not protected by their respective teams. During this two month period, each team is permitted to protect thirty-seven of its players (generally those that the team considers the most valuable); all other players on that team's roster are available to be picked up by another team in the league (King "Helps" 114). When a player is selected as a free agent from another team, that player is then able to negotiate a new contract with the team that selected him.
According to Rob St. Clair, Assistant Director of Public Relations for the Indianapolis Colts of the NFL, in some cases players are able to as much as double their salary through this information revealing process. However, if the team which chose the player does not offer a better package (in the player's eyes), the player is free to remain with his original team (St. Clair).

In addition to free agency, the Players' Association wants to improve the pension and benefit packages currently held by the players. These packages have not been updated since 1982. One change the players hope to see is a decrease in the deductible on their insurance plan (King "Still in Labor" 112). In a Sports Illustrated survey, fifty-six percent of the players said that improving benefits was their first objective in negotiations with the NFL, while thirty-nine percent said establishing free agency was their primary objective (King "Players Speak" 58).

The free agency issue in the National Football League is a genuinely unique one. In most industries, there is no ownership of employees that restricts movement such as what exists in the NFL. The primary complaint of the players is that their inability to entertain outside offers keeps their salaries artificially low (the average salary in the NFL as of 1991 was $430,000 per year (Bernstein 40).) In essence, the players are stating that by restricting their movement, the owners are prohibiting them from obtaining information about their actual worth to a team. Asymmetric information exists for the players because they are
not permitted to pit teams against one another in bidding for their services; therefore, the players are unable to discover their true worth. The only bargaining that happens is between a player (or his agent) and the team that owns the rights to the player.

The only recourse available to a player who believes he is not getting paid what he is worth is to sit out and not play. In essence, this constitutes a strike. After a period, the player and team will generally reach an agreement. Is the agreement as beneficial to the player as it would have been if the player could have negotiated with other NFL teams?

In 1987, the NFL Players' Association called a general strike against the teams for the main purpose of forcing the owners to permit free agency. However, the owners were able to lessen the strike's impact by hiring replacement players, and the season continued (Bernstein 40). The strike was plagued by players crossing the picket lines, and eventually all the striking players returned to their teams. The players' strike was unsuccessful at trying to determine the profitability of the NFL. By using free agency as a condition for the end of the strike, the union felt it could ascertain that the league was profitable enough to have free agency. By striking, the union hoped to force free movement of players into the league rules. Unfortunately for the union, this did not work out as planned, and the question of free agency has not been resolved.
Currently, the Players' Association has turned to other methods to try to force the owners to permit free agency. The Association has filed lawsuits (not yet decided) claiming that the NFL owners are committing antitrust violations by restricting the movement of the players. Antitrust laws state that employers within an industry may engage in restrictive labor practices if the industry's union agrees. The Players' union, according to the courts, was agreeing to the current state of affairs by conducting collective bargaining with the teams (Bernstein 40).

In attempts to change this assumed agreement on behalf of the Players' Association, the Association stopped functioning as a union in late 1989 by not engaging in collective bargaining (Bernstein 40). However, the National Labor Relations Board has not declared that the Players' Association is no longer a union. The Association's success at trial seems to hinge upon whether a judge will consider the Players' Association a union (Bernstein 40).

Analysts seem to believe that free agency is going to be a reality in the NFL in the near future. The NFL's chief negotiator, Harold Henderson, is proposing a plan where free agency would be offered to any player after six or seven years in the league. According to his plan, teams would also be forced to comply with a salary cap. This salary cap would prohibit teams from paying total salaries greater than a certain percentage of their total revenue (Bernstein 40). Major League Baseball (MLB) and the National Baseball Association (NBA) are both currently
using similar plans. If such a plan were enacted in the NFL, players would have a much easier time of determining their worth and being paid accordingly. Higher salaries for the better players would logically follow the adoption of such a plan. With higher stakes involved in the bargaining process, the risk of adverse selection of labor by the teams would be greater (due to higher salaries and freer movement). The quest for information on players' abilities would become more intense, and the stakes of the NFL bargaining games would grow even higher.

Summary

In summary, it can be seen that the firm - labor relationship is generally a complicated one, especially in terms of principal - agent contract negotiations. The theory of asymmetric information is a pervasive one throughout this relationship -- even in the National Football League; it resolves many questions on apparent inefficiencies of the market, and it addresses the need for the bargaining methods employed by both firms and unions. Rational explanations or an understanding of the firm - labor relationship cannot be achieved without the theory of asymmetric information, and for this reason it is so valuable.
Bibliography


