Economics in Sports

Sports Industry

Let's use our knowledge of labor and product markets to analyze the economics of the sports industry (team sports only, not individual sports such as tennis, golf, race driving, bowling). Before we can analyze the industry, we need to understand two characteristics of the sports industry. First, Sports leagues sell franchises that set up the teams as monopolists in their geographic area. Sports leagues are exempt from anti-trust laws, therefore, owners can get together and decide when and where to expand. Entry is completely blocked unless you set up an entire new league.

Second, there is a draft system for new players. Each year the teams get together and take turns selecting eligible new players. Typically the team with the worst record selects the first player, then the second worst team, etc., and finally the best team. After all teams have selected one player, the process is repeated. Once a player is selected by a team, no other team can select that player. That player can only negotiate for a contract with that team. If players do not come to agreement with the team that selected them, they must sit out the year and reenter the draft the following year (or possibly play in another country).

Currently players are allowed to become "free agents" after they have played in the league for a minimum period (typically 5 years which is the average career for players in most leagues). If players that are eligible for free agency play out their contract, they are free to negotiate with any team. This provides the players with more freedom, but even this freedom is limited in some cases. There are restrictions on signing free agents in some leagues, and some require that teams signing free agents compensate the teams losing them. This limits the free agent's mobility.

Against this background, we will examine three claims:

1. The draft system exploits players so they get paid less than they would without the draft system.

2. Owners need the draft system to equalize the distribution of talent across teams and keep them from going bankrupt.

3. Higher player salaries cause higher ticket prices, so fans have little sympathy for exploited players earning six figures per season.

Before we continue with the sports analogy here's some econ background info. Firms are willing to buy labor up to the point where the **m**arginal **r**evenue **p**roduct of labor (MRP) is equal to the market wage. The marginal revenue product is the extra revenue a firm generates when they buy one more unit of input. An example would be an additional hour of work. As long as the income generated by extra hours of work balances (or exceeds) the wages paid for those extra hours of work, firms will be willing to pay for more labor.

MRP > w : The firm will buy more labor
MRP = w : The firm is buying the right amount of labor
MRP < w : The firm is buying too much labor

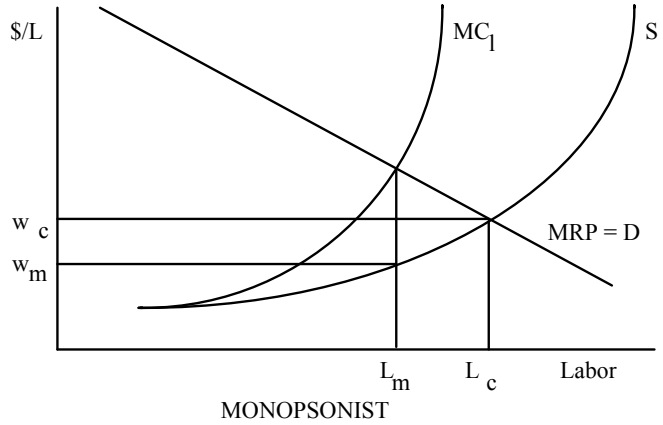
We have to make one modification before applying our labor market models to the sports industry. The labor market models assume that all labor is homogeneous, and everyone is paid the same amount. Clearly this is not true in the sports industry. Some players are better than others, and some get paid more than others. To accommodate this, we will talk about units of talent rather than units of labor. We will assume that the pay per unit of talent is the same for all players, but some players possess more talent than others. A player with 10 units of talent would receive twice the pay of a player with only 5 units of talent. The total talent on the team is the sum of the units of talent for each player on the team. Thus, a team can have more talent than its rivals, even though the teams have the same number of players, if its players have more units of talent than the rival players. If units of talent are homogeneous, the sports industry fits the labor market model. For example,` each team will hire talent to the point where $w_t = MRP_t$. At this point, talent is paid the value of what it produces (the last unit of talent is paid the value of the extra revenue that unit of talent produces). In this case, there is no exploitation, because labor is paid the value of its marginal product.

Monopsony

Since the labor market is not perfectly competitive in the sports industry, firms (or teams) are not competing against each other for talent. In fact, each team has a distinct labor pool to choose from, and that team is the only team that can hire from that pool. This makes the team a "monopsony" over the players it has drafted. A monopsonist is a single buyer of a product or factor of production (e.g., the government is a monopsonist for tanks and aircraft carriers). With the draft system, a sports team becomes a monopsonist over the players it has drafted (until they are eligible for free agency). Thus, the sports industry labor market is not perfectly competitive.

Because a monopsonist is the only buyer of labor, it faces the industry supply curve. Thus, its supply curve is upward sloping. (In perfect competition the firm faces a horizontal labor supply curve. It can hire as much labor as it wants at the market wage rate, so $w = MC_L = s$.) What is the MC_L in this case? If it wants to increase its quantity of labor, it has to pay a higher wage rate to entice additional units of labor into the market. However, it cannot increase the wage for only the new hires. The more experienced current staff would be upset. Thus, it has to give everyone a raise. Thus, the $MC_L > w$. For example, suppose that a firm currently hires 20 people and pays $10/hr. Furthermore, suppose that it must offer $10.25 to entice the 21st person into the industry. Because it must also give a $0.25/hr raise to its current employees, the MC of the 21st person is $10.25/hr. (the wage paid the 21st person) + $5.00/hr. (the

$0.25/hr raise it must pay to the other 20 people) => MC_L = $15.25. This is greater than the $10.25 wage paid to its employees, thus, the MC_L curve is above the supply curve (see graph below). How much labor will the monopsonist hire? The monopsonist wants to maximize profits, so it hires labor until MC_L = MRP (or where MC_l crosses MRP). What wage will it pay? To maximize profits, it should pay the minimum wage possible to attract the desired quantity of labor into the market. This is determined by the supply curve at the level of labor desired (see graph below). How does the quantity and price of labor hired by the monopsonist compare to perfect competition? In perfect competition, the quantity of labor hired and the wage rate are determined by the intersection of the demand (MRP) and supply curves. Thus, monopsonists restrict employment and reduce wages, relative to perfectly competitive firms. Think of the MRP curve as nothing but the demand for labor curve.



MONOPSONIST

Are the Players Exploited?

Are the players exploited? Yes, at least for players ineligible for free agency. The draft system makes teams monopsonists over their drafted players. This enables them to restrict the quantity of talent hired and pay a lower wage than they would without the draft system. Free agents face a more nearly perfectly competitive labor market, so the case for exploitation is weaker for them. (However, team owners have adopted several policies to limit the power of free agents in an attempt to retain some monopsony power. In basketball there is a cap on each team's total salaries. This precludes teams from hiring too many stars because they cannot pay sufficient salaries and remain under their salary cap. (Of course, this may also affect the salary offered to non-free agents.) In football, teams losing free agents are compensated by the teams signing the free agent. The compensation can involve important players, which reduces the incentive to sign free agents. Finally, in baseball the courts have concluded that the owners conspired not to sign free agents, which also decreased their salaries, though illegally. To the extent that these policies retain some monopsony power for the teams, even free agents may be exploited to some extent.)

A team's monopsony power is limited to the extent that players have a viable alternative. For example, basketball and hockey players can play in Europe, baseball players can play in Japan, and football players can play in Canada or arena football. Furthermore, leagues have begun

introducing arbitration for players who have been in the league for a few years but not enough to be eligible for free agency. In arbitration, the player and team both recommend an appropriate salary figure. Based on supporting data, usually the salaries earned by players of similar ability, the arbitrator picks one of the two figures, and both the player and team must abide by the arbitrator's decision. Because comparisons with free agents' salaries can be used in the arbitration process, it may reduce the exploitation of players eligible for arbitration.

The Players Union

Suppose the a union approached the players in a sports league and stated that by implementing a minimum wage (i.e., price floor) the union could increase both the salary and quantity of talent hired by sports teams. Should the players believe the union? (The same analysis applies throughout for both a federal minimum wage law and a union imposed minimum wage.) If the labor market were perfectly competitive, the players should not believe this claim (players eligible for free agency are generally paid more than the minimum wage, so it would not affect them). In a perfectly competitive labor market, a minimum wage holds the wage above the equilibrium level (see graph below). This increases the quantity of labor supplied and reduces the quantity demanded. Because the firms will only hire the quantity of labor they demand, this will reduce the number of people employed. There is an excess labor supply, but wages can't decrease to eliminate the surplus. (People with jobs are better off with the union, but those who lose their jobs are worse off.) The union would be wrong to claim it could increase both wages and employment.

How would a minimum wage law affect a monopsony? Would it affect the demand for labor? No, it is an adjustment in price so it would only affect the quantity of labor demanded. Would it affect the supply of labor? No, it is an adjustment in price so it would only affect the quantity of labor supplied. Would it affect the MC_I? Yes. With a minimum wage, teams must pay the first unit of talent the minimum wage. To hire a second unit of talent, the team can continue to offer the minimum wage, because that is higher than the wage that unit of talent is willing to accept. This is true for all units of talent until the minimum wage hits the supply curve. If the team wants to hire additional talent at that point, it must pay a wage that exceeds the minimum wage, and the higher wage is paid to all units of talent, so the minimum wage is meaningless.

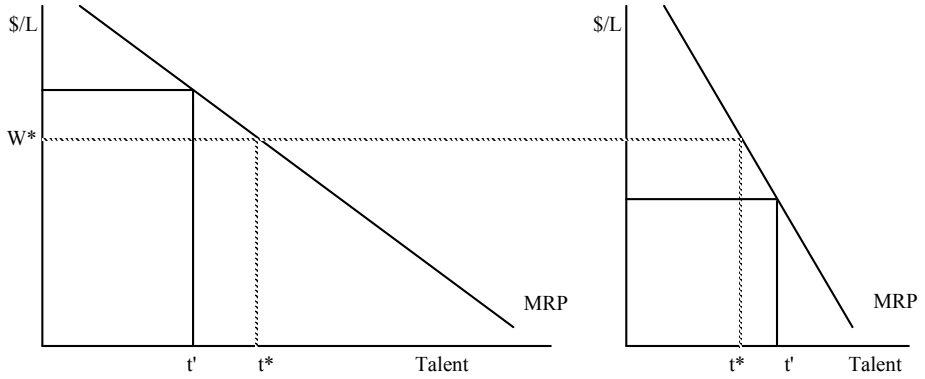
What is the intuition behind the seemingly counter-intuitive result that the monopsonist increases both wages and the quantity of talent hired with a minimum wage? The reason for this result is that the minimum wage actually reduces the MC_I for a portion of the supply of labor. In particular, the minimum wage exceeds the wage required to entice the first units of talent into the industry. Thus, the firm does not have to raise the wage rate paid to entice additional units of labor. This reduces the MC_I. To illustrate, consider the example above. Suppose a monopsonist is hiring 20 units of labor and paying a minimum wage of $12/hr. (this is above the $10/hr. that the monopsonist would pay in absence of the minimum wage law). If

the monopsonist wants to hire the 21st unit of labor, that person is willing to work for $10.25/hr. Thus, the firm can hire that person for the $12/hr. minimum wage. Even though the firm is paying labor more in this case, the MC for the 21st unit is $12/hr. This is below the $15.25/hr. marginal cost the monopsonist faced before the minimum wage, because the firm did not have to give a raise to the other 20 employees. Thus, the minimum wage reduces the MC_l by raising the wage rate above the pre-union level for the first units of labor hired (The minimum wage does not have this effect in perfect competition because $W = MC_l$. Thus, an increase in w also increases MC_l.) Note that the firm hires more labor under a minimum wage law, but earns lower profits because the total wage bill increases.

Does the Draft Balance Talent?

Owners claim that the draft system is needed to balance talent across teams. In a competitive labor market, each team would pay the market wage for talent, and hire talent up to the point where $MC_l^i = MRP^i$. Teams in more lucrative markets would have higher MRP's, and would therefore hire more talent. As a result, the outcome of games would become predictable and fans would lose interest. This situation is shown below.

How does the draft affect the distribution of talent? Assume the draft has the intended effect and after the draft the distribution of talent is equal for all teams. What would you expect to happen? MRP in the more lucrative market would exceed MRP in the less lucrative market. This would give the owners an incentive to buy and sell talent. The lucrative market team could offer to pay the less lucrative market team a sum that exceeded the value of the talent to that team. Thus, teams would buy and sell talent until there was no incentive for further exchanges. (They may not have outright purchases, but you would expect to see a player with lots of talent traded for several players with less talent. Because all teams have the same number of players, this enables teams in lucrative markets to increase their level of talent relative to teams in less lucrative markets.) This occurs when $MRP^i = MRP^j$. Thus, the draft system does not affect the distribution of talent if owners can buy and sell talent. It serves to depress the wage rate so that all teams hire more talent, and subsidizes teams in less lucrative markets at the expense of players ineligible for free agency.



How can sports leagues equalize talent across teams without resorting to the draft system? Complete revenue sharing is one possibility. This would ensure that MRP was equal for all teams. However, it may change owners incentives in detrimental ways (i.e., minimize payroll, forgo stadium renovations, etc.). Another alternative might be to give teams more freedom to relocate and make expansion easier. This would encourage competition in the most lucrative markets, reducing their MRP and making it more equal with single teams in less lucrative markets.

Are Teams Losing Money?

Owners also claim that they need the draft system to help constrain player salaries because several teams are losing money. They claim an increase in wages would cause many more teams to run deficits and force some teams out of business. Indeed, tax returns frequently show that teams are losing money.

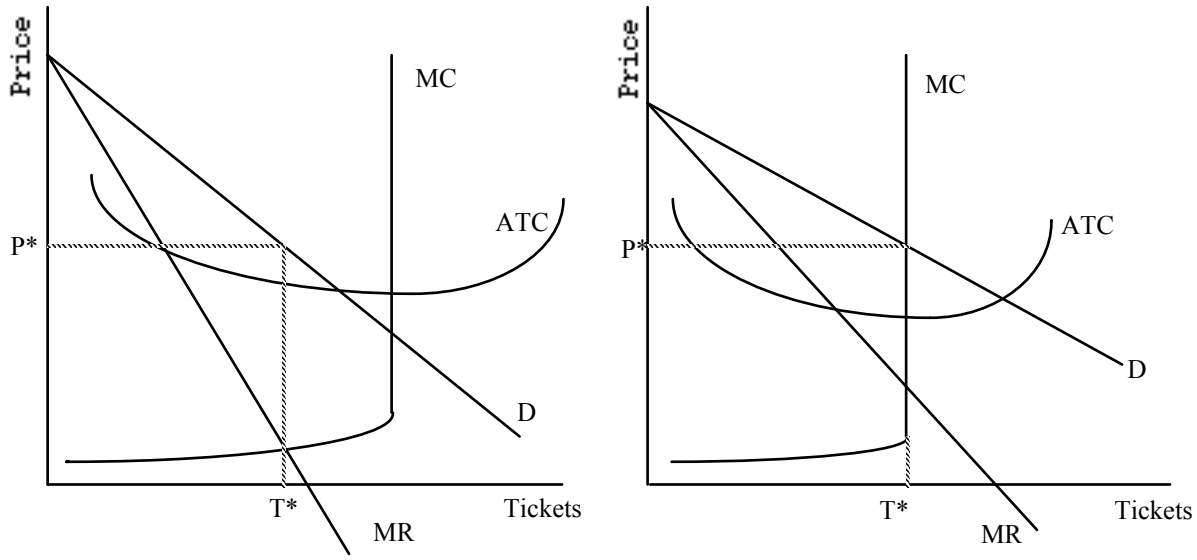
However, things may not be as they seem in all cases. In particular, players are considered as capital assets for sports teams. As such, players are a depreciable asset. For example, suppose someone buys the San Francisco 49ers for $200 million. This purchase price is divided between the franchise rights, stadium lease, equipment and other physical assets, and the rights to the players salaries. In particular, suppose $50 million is allocated to the franchise rights, $20 million to the stadium lease, $5 million for equipment, training facilities, etc. That means that $125 million is allocated to the rights to the players contracts (a team isn't a team without its players). This expense can be depreciated over the average life of a player in the league (i.e., about 5 years in most leagues). Assuming straight line depreciation, this creates a $25 million per year depreciation expense. Suppose the team collects $100 million per year from tickets, national, local and cable TV, radio, concessions, etc. Assume that player and administrative salaries, stadium lease payments, and other expenses are $85 million per year. Thus, the team owner receives a net cash flow of $15 million per year. However, the team can claim a $25 million depreciation expense for player contracts. Thus, the team reports a $10 million accounting loss to the IRS. Further assume that the team owner earns $13 million in net income from other sources. The loss from the sports team is deducted from the owners personal income before paying taxes. Thus, the owner shows a net income of $3 million. If the owner is in a 33% tax bracket the owner pays $1 million in taxes. If players were not depreciable, the owner would show a net income of $28 million (which equals the owner's actual cash flow) and pay $9.33 million in taxes. Because players are depreciable (the only case where labor is depreciable), accounting losses may not indicate that the team cannot afford to pay higher player salaries. (Did you ever wonder why teams stayed in business year after year if they continually lost money?)

Do Higher Player Salaries Cause Higher Ticket Prices?

Many fans will not worry that players are discriminated against if higher player salaries lead to higher ticket prices. What determines ticket prices? Sports teams are essentially monopolists because the leagues limit entry and location (to some extent) of franchises. Thus, teams have market power and can set rather than take the market price. From monopoly theory, we know that profit maximizing monopolists will produce where MC = MR and charge whatever price the market will bear. The question here is to determine what constitutes MC and MR with regard to the quantity and price of tickets.

MR comes from the demand curve, where the demand curve indicates the fans' willingness to purchase tickets. Demand will depend on the talent on the team (affects consumers' tastes for seeing the sports team), as well as the price of substitutes (other forms of entertainment), the price of complements (hot dogs, beer, and parking), income, population, etc. What about MC? The cost of selling another ticket is the cost of printing the ticket, a little extra security, ushers, clean-up after the game, etc. Thus, MC is very low until the stadium reaches capacity. After the stadium reaches capacity, MC becomes essentially infinite (you would have to build another seat). Then the monopolist plans to sell the number of tickets where MC = MR and charge the price indicated by the demand curve. Depending on the relative values of MC and MR, it may be optimal for the team to sell out the stadium on a regular basis, or for the stadium to be partially full.

Where do player salaries come into play in the ticket pricing decision? They don't. Why not? Because player salaries are a fixed cost that must be paid regardless of fan attendance. An increase in player salaries would increase ATC, but it would not affect MC. Thus, player salaries would not affect ticket prices. (There may be an indirect effect if the increase in player salaries resulted from an increase in talent on the team. In this case, demand for tickets might increase leading to higher ticket prices. The rise in ticket prices does not result from higher player salaries in this case. Rather both higher ticket prices and higher player salaries result from an increase in the team's talent.) This makes intuitive sense. If teams are profit maximizing monopolists, they will choose the ticket price that maximizes the difference between revenues and variable costs. This gives them the largest cash flow possible to cover fixed costs and profits. If fixed costs increase, their profits will decrease, but it will not effect the price and quantity of tickets that maximizes the difference between revenues and operating costs. It would only make sense for a team to increase ticket prices in response to higher player salaries if the team where not maximizing profits in the first place.



This seems counter to recent experience when both ticket prices and player salaries have been increasing. However, these trends do not necessarily represent cause and effect. More likely, both the increase in ticket prices and player salaries have resulted from the same factors (increases in TV exposure has increased the demand for tickets and their price; the increase in gate and TV revenues have increased the teams MRP and the players salaries).

There is more economics that could be considered in this sports analogy, but it should suffice to end here.